

*Reference to be  
taken from the library*

PART A  
IONOSPHERIC DATA

ISSUED  
FEBRUARY 1957

U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO



IONOSPHERIC DATA

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## SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1957, the following symbols are used:

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

- A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example, Es.
- B Measurement influenced by, or impossible because of, absorption in the vicinity of f-min.
- C Measurement influenced by, or impossible because of, any nonionospheric reason.
- D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.
- E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.
- F Measurement influenced by, or impossible because of, the presence of spread echoes.
- G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.

(This symbol applies, for example, to the case of foF2 near or less than foF1, or of foEs near or less than foE. Do not use this symbol in cases where the lower frequency limit of the recorder gives the limitation; in these cases "E" should be used.)



- H Measurement influenced by, or impossible because of, the presence of a stratification.
- L Measurement influenced by or impossible because the trace has no sufficiently definite cusp between layers.
- N Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.
- O Measurement refers to the ordinary component.
- R Measurement influenced by, or impossible because of, absorption in the vicinity of a critical frequency.
- S Measurement influenced by, or impossible because of, interference or atmospheric.
- V Forked trace which may influence the measurement.
- W Measurement influenced or impossible because the echo lies outside the height range recorded.
- X Measurement refers to the extraordinary component.
- Y Intermittent trace.
- Z Third magneto-ionic component present.

b. Qualifying Symbols

Used as a preceding symbol on monthly tabulation sheets.

- D greater than . . .
- E less than . . .
- I Missing value has been replaced by an interpolated value.
- J Ordinary component characteristic deduced from the extraordinary component.
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
- U Uncertain or doubtful numerical value.

These symbols are taken from NBS Report 5033, "Summary of Changes in Ionospheric Vertical Soundings, Observing and Scaling Procedures - Effective 1 January 1957," which draws upon the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, Sept. 2, 1956.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, H, L, N, R or S are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F (and h'E near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the descriptive symbol D, only when it replaces a frequency characteristic.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

At night B for fEs is counted on the low side when there is a numerical value of foF2; otherwise it is omitted from the median count.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If the count is four or less, the data are considered insufficient and no median value is computed.

2. For the F2 layer, h'F or foEs, if the count is from five to nine, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as the count is at least five, the median is not considered doubtful. A count of at least 5 is considered sufficient for an h'Es median.

3. For all layers, if more than half of the data used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

- a. Differences in scaling records when spread echoes are present.
- b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily, a blank space in the fEs or foEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F2 or h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

- a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.
- b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.
- c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.
- d. The tables may contain median values of either foEs or fEs. The graph of median Es corresponds to the table. Percentage curves of fEs are estimated from values of foEs when necessary.



# PREDICTED AND OBSERVED SUNSPOT NUMBERS

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number										
	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947
December		150	42	11	15	33	53	86	108	114	126
November		147	35	10	16	38	52	87	112	115	124
October		135	31	10	17	43	52	90	114	116	119
September		119	30	8	18	46	54	91	115	117	121
August		105	27	8	18	49	57	96	111	123	122
July	150*	95	22	8	20	51	60	101	108	125	116
June	150*	89	18	9	21	52	63	103	108	129	112
May	150*	77	16	10	22	52	68	102	108	130	109
April	150*	68	13	10	24	52	74	101	109	133	107
March	150*	60	14	11	27	52	78	103	111	133	105
February	150*	53	14	12	29	51	82	103	113	133	90
January	150*	48	12	14	30	53	85	105	112	130	88

\*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers (some of which may be subject to minor change) beginning with the minimum of April 1954.

## Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	72	80
1956	88	97	108	119	128	137	145					

## WORLD - WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 140 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:  
 Buenos Aires, Argentina  
 Decepcion I.

Commonwealth of Australia, Ionospheric Prediction Service of the  
 Commonwealth Observatory:  
 Brisbane, Australia  
 Canberra, Australia  
 Hobart, Tasmania  
 Townsville, Australia

Australian Department of Supply and Shipping, Bureau of Mineral  
 Resources, Geology and Geophysics:  
 Watheroo, Western Australia

University of Graz:  
 Graz, Austria

Meteorological Service of the Belgian Congo and Ruanda-Urundi:  
 Elisabethville, Belgian Congo  
 Leopoldville, Belgian Congo

Escola Politecnica, University of Sao Paulo:  
 Sao Paulo, Brazil

Defence Research Board, Canada:  
 Baker Lake, Canada  
 Churchill, Canada  
 Ottawa, Canada  
 Resolute Bay, Canada  
 Winnipeg, Canada

Radio Wave Research Laboratories, National Taiwan University,  
 Taipeh, Formosa, China:  
 Formosa, China

Danish National Committee of URSI:  
 Godhavn, Greenland

National Laboratory of Radio-Electricity (French Ionospheric  
 Bureau):  
 Casablanca, Morocco  
 Poitiers, France

The Royal Netherlands Meteorological Institute:  
 De Bilt, Holland

Indian Council of Scientific and Industrial Research, Radio Re-  
 search Comittee, New Delhi, India:  
 Ahmedabad (Physical Research Laboratory)  
 Bombay (All India Radio)  
 Calcutta (Institute of Radio Physics and Electronics)

Delhi (All India Radio)  
 Madras (All India Radio)  
 Tiruchy (All India Radio)  
 Kodaikanal (India Meteorological Department)

Geophysical and Geodetic Institute, Genoa, Italy:  
 Monte Capellino, Italy

Ministry of Postal Services, Radio Research Laboratories,  
 Tokyo, Japan:  
 Akita, Japan  
 Tokyo (Kokubunji), Japan  
 Wakkanai, Japan  
 Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of  
 Scientific and Industrial Research:  
 Campbell I.  
 Christchurch, New Zealand  
 Rarotonga, Cook Is.

Norwegian Defence Research Establishment, Kjeller per  
 Lillestrom, Norway:  
 Tromso, Norway

Manila Observatory:  
 Baguio, P. I.

South African Council for Scientific and Industrial Research:  
 Capetown, Union of South Africa  
 Johannesburg, Union of South Africa

Research Institute of National Defence, Stockholm, Sweden:  
 Kiruna, Sweden

United States Army Signal Corps:  
 Adak, Alaska  
 Ft. Monmouth, New Jersey  
 Okinawa I.  
 Thule, Greenland  
 White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Lab-  
 oratory):  
 Fairbanks, Alaska (Geophysical Institute of the  
 University of Alaska)  
 Huancayo, Peru (Instituto Geofisico de Huancayo)  
 Maui, Hawaii  
 Panama Canal Zone  
 Point Barrow, Alaska  
 Puerto Rico, W. I.  
 Talara, Peru (Instituto Geofisico de Huancayo)  
 Washington, D. C.

## HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 through 84 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

The interpretation of a cell is as follows: U F  
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The U is a qualifying symbol meaning doubtful. Other qualifying symbols are I, interpolated, D, greater than, E, less than, J, ordinary component deduced from extraordinary, and T, value determined by a sequence of observations. Absence of a letter in the upper left position means full weight is given to the observation.

Symbols such as F above are given in the upper right position.

There should be no difficulty in the placing of the decimal point. For the time being, a final zero will be found in each value of foF1. Thus at a later date it will be possible to register more closely scaled values of this characteristic, whenever such are reported.

## ERRATA

1. CRPL-F149 (Part A), pp. 21 through 31: Certain of these tables of Washington data for December 1956 are improperly alined.
2. CRPL-F149 (Part A), p. 57, fig. 103: The (M3000)F2 curve should read 3.0 from the 14th through the 18th hour lines.



EXAMPLES OF IONOSPHERIC VERTICAL SOUNDINGS  
 BELVOIR, VIRGINIA; DEC. 19, 1956  
 (Geomagnetic Latitude 50°N)

The following ionograms were obtained at the Belvoir, Virginia, vertical sounding station. They are typical of day and night conditions for December at this geomagnetic latitude. Ionospheric data are scaled directly from these records onto the daily f-plot, a graph of frequency characteristics vs. time. The f-plot for the day represented by these soundings is found on the following page. Medians as found in the Tables of Ionospheric Data are calculated using hourly values taken from the f-plot (where prepared daily) or directly from the ionogram.

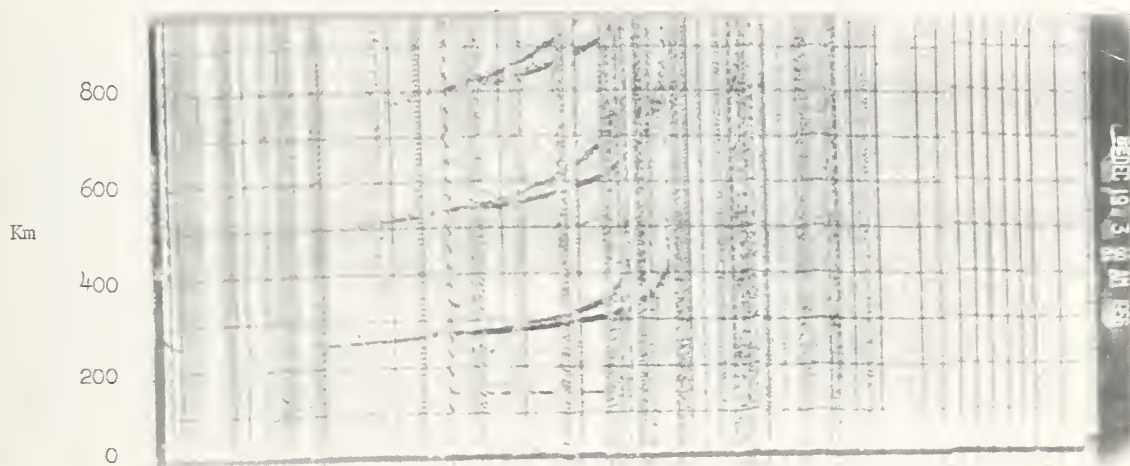


Fig. A. Belvoir, Virginia, Dec. 19, 1956, 0300 hours, 75°W time.

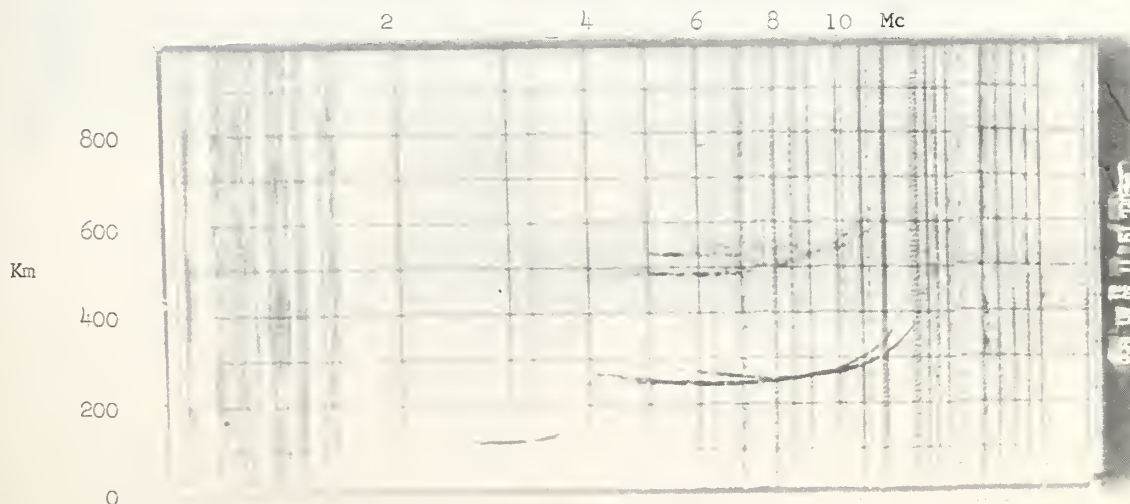


Fig. B. Belvoir, Virginia, Dec. 19, 1956, 1130 hours, 75°W time.

f-PLOT OF  
IONOSPHERIC DATA  
DATE December 19, 1956  
STATION Fort Belvoir, Va.  
SCALED BY JJS  
MERIDIAN TIME 75°W

UNPLOTED HOURLY VALUES									
HR	F2 M3000	F1 M3000	WY M	N'E T M	S T M	fEs Y	S M		
00	3001								S
01	3001						035		S
02	3001	F							S
03	3151						072		S
04	3001	F					035		S
05	2851								S
06	2901	F					037		S
07	3001						037		S
08	3201					L 111	114		G
09	3201					L 1012A	036H		G
10	3151					L 1191	038		G
11	2801					L 1151			G
12	3051					L 1091	056		G
13	2901					L 1091	036		G
14	2901	H				L 1091			G
15	2851					L 1091	039		G
16	2901					L 1091	033		G
17	3051						038		G
18	2901						043		G
19	3101								S
20	3001						035		S
21	2901						029		S
22	2901								S
23	3001								S

CPO 44772



f-PLOT

## TABLES OF IONOSPHERIC DATA

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Table 1

Washington, O. C. (38.7°N, 77.1°W)							
January 1957							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00		5.6	270				2.85
01		5.5	270				2.80
02		5.4	275				2.75
03		5.5	270				2.90
04		5.2	255				2.90
05		4.6	260				2.80
06		4.3	260				2.85
07		5.0	260				2.95
08		6.6	230				3.20
09	(240)	10.7	230		121	2.20	3.20
10	240	11.7	225		115	2.80	3.20
11	250	12.7	230		111	3.25	3.10
12	245	13.0	225		115	3.40	3.00
13	250	12.8	230		114	3.45	2.90
14	(260)	12.5	230		114	3.50	2.90
15	(245)	12.5	235		111	3.30	2.85
16	(250)	12.3	240		115	3.00	2.80
17	---	11.6	230		118	2.45	2.85
18		10.6	225		---	---	2.85
19		9.4	230				2.90
20		8.2	230				2.95
21		7.1	240				2.95
22		6.5	250				2.90
23		5.8	260				2.90

Time: 75.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 3

Graz, Austria (47.1°N, 15.5°E)							
December 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	4.2					
01	---	4.2					
02	---	4.3					
03	---	4.1					
04	---	3.8					
05	---	3.8					
06	---	3.8					
07	270	4.9					
08	230	8.5					
09	240	0					
10	240	0					
11	240	0					
12	240	0					
13	250	0					
14	240	0					
15	245	0					
16	230	0					
17	230	9.4					
18	250	8.3					
19	250	7.0					
20	260	5.4					
21	---	4.6					
22	---	4.3					
23	---	4.1					

Time: 15.0°E.  
Sweep: 2.5 Mc to 11.0 Mc in 2 minutes.

Table 5

Formosa, China (25.0°N, 121.5°E)							
December 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	240	9.4					2.9
01	260	8.2					2.8
02	280	7.4					2.7
03	280	8.0					2.7
04	280	7.1					2.7
05	<280	6.4					2.7
06	270	9.2					2.8
07	260	11.6					2.9
08	260	13.3					3.0
09	250	14.4	250	---	120	3.0	3.0
10	240	14.4	240	---	120	3.7	2.9
11	(240)	14.7	240	---	120	3.9	2.7
12	---	15.3	240	---	120	4.0	2.6
13	---	15.8	240	---	---	---	2.5
14	---	16.0	240	---	---	---	2.6
15	---	16.0	240	---	---	---	2.6
16	(260)	16.1	240	---	120	2.9	2.7
17	260	16.2	---	---	---	---	2.6
18	240	15.7					(3.1) 2.9
19	240	16.0					2.8
20	260	16.0					(2.8) 2.9
21	240	15.0					3.0
22	240	13.0					2.95
23	240	11.1					2.9

Time: 120.0°E.  
Sweep: 1.1 Mc to 19.5 Mc in 15 minutes, manual operation.

Table 2

Point Barrow, Alaska (71.3°N, 156.8°W)							
December 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00		---					7.0 ----
01		---					5.6 ----
02		---					4.8 ----
03		---					4.1 ----
04		(3.8)					2.6 (2.60)
05		---					3.0 ----
06		(4.5)					2.9 ----
07		(4.5)					3.2 (2.70)
08		(4.6)					4.2 (2.80)
09		5.0					3.0 (2.80)
10		5.2					3.0 (2.75)
11		6.3					2.90
12		7.4					2.95
13		8.9					3.00
14		9.8					3.00
15		9.8					3.00
16		(9.6)					3.05
17		(8.0)					(3.10)
18		5.8					2.90
19		4.8					2.1 (2.90)
20		(4.4)					3.0 (3.00)
21		(4.5)					3.6 (2.85)
22		(4.4)					4.8 (2.85)
23		(4.6)					4.9 ----

Time: 150.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 4

Ft. Monmouth, New Jersey (40.3°N, 74.1°W)							
December 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	270	5.9					(3.2) 2.70
01	<270	5.8					(2.2) 2.80
02	270	5.7					(2.6) 2.75
03	270	5.7					(3.7) 2.75
04	250	5.4					(3.8) 2.75
05	250	5.0					(4.9) 2.75
06	260	4.6					(4.8) 2.85
07	250	6.6					2.95
08	230	9.8			119	(2.5)	3.20
09	230	12.0	220	---	111	2.8	3.15
10	(230)	13.0	220	---	112	3.3	3.05
11	(250)	13.6	220	---	111	3.4	2.95
12	(250)	13.5	220	---	111	(3.5)	2.90
13	(240)	13.4	230	---	111	(3.4)	2.85
14	(240)	13.0	230	---	111	3.2	2.85
15	---	12.9	230	---	115	(2.8)	2.80
16	230	12.5	230	---	125	2.3	2.85
17	230	11.5	220	---	---	---	2.85
18	230	10.2					2.0 2.90
19	230	9.2					(3.6) 2.90
20	230	8.0					2.9 2.90
21	240	6.9					(3.0) 2.80
22	<260	6.3					(2.6) 2.80
23	260	6.0					(3.1) 2.80

Time: 75.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 6

Maui, Hawaii (20.8°N, 156.5°W)							
December 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	230	7.8					2.90
01	240	7.3					2.95
02	230	6.4					3.05
03	230	5.3					3.0
04	230	4.2					2.7
05	280	3.7					2.60
06	290	4.0					2.60
07	290	7.0					2.90
08	250	11.3			119	2.7	3.10
09	270	13.6	245	---	111	3.3	3.10
10	260	14.2	240	---	111	3.6	3.00
11	(270)	13.4	230	---	109	3.8	2.85
12	(340)	13.3	230	6.7	109	3.9	2.70
13	370	13.5	230	6.9	109	3.9	2.70
14	370	13.0	240	6.8	110	3.7	2.65
15	350	12.7	240	6.4	111	3.5	2.65
16	(320)	12.3	250	---	117	3.2	2.70
17	250	11.8	250	---	123	2.4	2.75
18	240	11.2					3.4 2.90
19	230	9.9					3.0 2.90
20	240	9.4					2.8 2.85
21	250	9.7					2.4 2.95
22	240	9.5					3.05
23	230	9.0					3.05

Time: 150.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.



Table 7

Puerto Rico, W. I. (18.5°N, 67.2°W)

December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	6.6					(3.6)	2.90
01	250	5.7					(2.8)	2.95
02	240	5.2					3.0	2.90
03	260	4.6					3.0	2.80
04	300	4.5					2.9	2.50
05	280	4.6					(2.7)	2.65
06	270	5.0					(3.2)	2.80
07	260	7.6					(3.2)	3.00
08	240	11.4	---	---	115	2.7	<1.7	3.10
09	240	13.2	240	---	109	3.3		3.05
10	(240)	13.3	230	---	109	3.7		2.95
11	(240)	12.6	230	---	109	3.9		2.90
12	---	11.7	225	7.5	109	4.0		2.70
13	---	11.5	230	7.4	109	4.0	4.8	2.65
14	---	11.3	230	6.7	111	3.8	5.0	2.60
15	---	11.1	230	6.7	115	3.6		2.60
16	(250)	10.9	240	---	117	3.3	4.2	2.60
17	250	10.9	250	---	(119)	2.6	4.0	2.65
18	250	10.4					4.0	2.75
19	240	9.2					3.7	2.70
20	260	8.9					2.9	2.70
21	260	8.6					2.9	2.80
22	250	8.2					(2.6)	2.85
23	240	7.2					(3.1)	2.95

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

Panama Canal Zone (9.4°N, 79.9°W)

December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	10.0					2.2	3.05
01	200	7.5					(2.4)	3.00
02	210	5.8						2.80
03	250	5.0						2.65
04	280	4.8						2.60
05	290	5.0						2.60
06	280	7.0						2.75
07	260	10.9						3.00
08	250	13.5	240	---	111	3.1	4.8	3.05
09	250	14.0	235	---	107	3.6	5.6	2.90
10	(290)	13.9	230	---	107	4.0	5.5	2.85
11	---	13.0	230	---	105	4.1	5.6	2.70
12	380	12.9	220	7.2	105	4.2	5.6	2.60
13	400	12.4	220	7.0	105	4.1	5.8	2.55
14	410	12.3	220	6.9	105	4.0	5.5	2.50
15	400	12.0	230	6.6	106	3.8	5.7	2.45
16	<380	11.8	240	---	109	3.4	5.7	2.50
17	(260)	11.5	250	---	119	2.8	4.8	2.55
18	270	11.4	---	---	---	---	4.2	2.70
19	240	10.5					3.5	2.80
20	240	9.5					3.4	2.75
21	250	9.7					3.0	2.75
22	240	10.6					3.0	2.95
23	230	10.6					2.7	3.00

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Thule, Greenland (76.6°N, 68.7°W)

November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(5.3)						(2.75)
01		(5.8)						(2.60)
02		(4.8)						(2.50)
03		(4.6)						(2.55)
04		(4.9)						(2.50)
05		(4.6)						(2.60)
06		(4.0)						(2.60)
07		4.9						(2.65)
08		5.2						(2.70)
09		(6.0)						(2.70)
10		(6.5)						(2.80)
11		(6.8)						(2.80)
12		7.6						(2.80)
13		7.2						(2.70)
14		(7.0)						(2.75)
15		(6.6)						(2.55)
16		(6.7)						(2.55)
17		(6.8)						(2.55)
18		(6.2)						(2.60)
19		(6.6)						(2.55)
20		(7.0)						(2.60)
21		(5.8)						(2.55)
22		(5.8)						(2.60)
23		(5.6)						(2.70)

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

Point Barrow, Alaska (71.3°N, 156.8°W)

November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(4.4)					3.7	(2.50)
01							5.1	(2.60)
02		(4.4)					3.2	(2.55)
03		(4.2)					4.0	(2.75)
04		(4.2)					3.1	(2.65)
05		(4.2)					2.7	---
06							3.1	(2.60)
07		(4.6)					3.5	(2.60)
08		(5.6)					4.0	(2.70)
09		6.5					3.2	2.80
10		7.4					3.1	3.00
11		7.6			---	---		3.00
12		8.2			---	---		3.00
13		9.4			---	---		3.00
14		10.4			---	---		3.00
15		10.6						3.00
16		9.8						3.00
17		(8.4)						3.00
18		(6.5)						(2.90)
19		(4.8)					2.0	(2.90)
20		(4.4)					2.2	(3.00)
21		(4.5)					4.2	(2.80)
22		(4.4)					4.0	(2.80)
23		4.8					4.2	(2.50)

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Fairbanks, Alaska (64.9°N, 147.8°W)

November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(4.6)					4.5	(2.80)
01		(4.6)					5.0	(2.75)
02		(4.8)					5.6	(2.70)
03		(5.2)					5.9	(2.60)
04		(5.2)					5.7	(2.65)
05		(4.8)					4.8	(2.70)
06		(5.2)					5.5	(2.80)
07		(4.9)					3.8	(2.75)
08		(6.2)						(3.00)
09		7.8			<121	2.3		3.00
10		9.4			105	2.5		3.00
11		9.8			103	---		3.00
12		11.1			---	2.6		3.00
13		11.1			---	2.95		2.95
14		11.5			(119)	2.3		3.00
15		11.5			---	---		2.95
16		11.5						2.95
17		8.8						3.00
18		(7.8)						(3.00)
19		(5.8)					3.5	(3.00)
20		(5.2)					2.8	(3.10)
21		(4.5)					3.8	(3.10)
22		(4.6)					5.2	(3.10)
23		(4.8)					6.0	(2.80)

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 12

Adak, Alaska (51.9°N, 176.6°W)

November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	3.7						2.50
01	340	3.6						2.50
02	350	3.6						2.50
03	360	3.4						2.45
04	340	3.5						2.45
05	<340	3.2						2.40
06	<300	3.4						2.60
07	260	5.6			---	---	1.7	2.90
08	240	9.0	---	---	119	2.4		3.10
09	230	12.0	---	---	120	2.7		3.10
10	230	13.8	235	---	117	(3.0)		3.05
11	230	14.4	230	---	119	3.2		3.00
12	230	14.5	230	---	119	(3.1)		2.95
13	230	14.0	235	---	119	(3.0)		2.90
14	230	13.8	230	---	121	(2.7)		2.95
15	230	13.1	---	---	118	2.3		2.90
16	220	12.0	---	---	---	---		2.95
17	220	9.7						2.95
18	220	7.8						3.00
19	230	5.7						3.05
20	240	4.0						3.00
21	280	3.9						2.75
22	300	3.4						2.65
23	<320	3.4						2.60

Time: 180.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 13

White Sands, New Mexico (32.3°N, 106.5°W) November 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.8					3.1	2.70
01	270	4.8					2.8	2.70
02	280	4.6					2.3	2.65
03	290	4.6					3.8	2.60
04	290	4.2					3.0	2.55
05	<300	4.2					2.9	2.55
06	270	4.8					3.0	2.70
07	240	8.0				2.2	2.2	3.10
08	230	11.2	230	---	111	(3.0)		3.15
09	(230)	13.2	230	---	109	3.3	3.4	3.05
10	(240)	13.6	225	---	(109)	3.6		2.95
11	(280)	13.7	225	---	(111)	(3.7)	3.7	2.85
12	(300)	13.6	225	---	(111)	(3.8)	3.8	2.75
13	(320)	13.7	230	---	111	(3.7)	3.8	2.70
14	(310)	13.5	230	---	111	(3.6)	4.0	2.70
15	(320)	13.0	235	---	111	(3.3)	3.5	2.70
16	(240)	13.0	235	---	115	(2.7)	2.9	2.75
17	240	12.4	---	---			3.0	2.80
18	230	10.9					3.3	2.80
19	230	9.6					3.0	2.90
20	230	7.9					2.7	2.95
21	230	6.5					2.7	2.85
22	250	5.6					3.1	2.85
23	(270)	4.9					2.4	2.70

Time: 105.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 14

Okinawa I. (26.3°N, 127.0°E) November 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	10.3						2.00
01	250	9.4						2.05
02	240	8.0						2.95
03	240	7.2						2.90
04	240	6.4						2.90
05	250	5.2						2.50
06	300	5.4						2.60
07	270	9.4						3.00
08	250	12.6	250	---	115	(2.8)	4.4	3.10
09	(240)	14.6	245	---	111	(3.4)	4.7	3.00
10	---	15.0	240	---	111	(3.6)	5.2	2.90
11	---	14.9	235	---	111	(3.0)	5.6	2.75
12	---	15.3	235	---	111	(3.9)	5.2	2.65
13	300	15.7	235	---	111	(3.9)	5.2	2.60
14	---	15.0	240	---	111	(3.0)	5.0	2.55
15	---	16.2	245	---	111	(3.5)	5.0	2.60
16	---	16.2	250	---	113	(3.1)	5.0	2.60
17	250	14.9	255	---	129	---	4.2	2.65
18	260	14.8					3.1	2.70
19	260	15.0					2.7	2.65
20	260	16.8					2.8	2.75
21	230	16.7					2.3	2.80
22	230	13.4					2.6	2.85
23	240	11.5						2.80

Time: 135.0°E.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Puerto Rico, W. I. (18.5°N, 67.2°W) November 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	7.8					(3.5)	2.95
01	240	6.8					(3.0)	3.00
02	240	5.8					(2.8)	2.80
03	250	5.0					(3.0)	2.80
04	300	4.8					(2.8)	2.50
05	280	4.8					(2.5)	2.60
06	270	5.0					(2.6)	2.80
07	250	8.8						3.10
08	240	12.0	---	---	117	<1.9	3.0	3.10
09	240	13.4	240	---	115	<3.5	2.7	3.05
10	240	13.9	230	---	114	3.8		3.00
11	---	13.4	230	---	111	3.9	3.2	2.85
12	---	13.1	230	---	110	4.0	3.2	2.75
13	---	12.9	230	---	111	3.9	4.4	2.65
14	---	12.3	230	7.4	113	3.8	3.9	2.60
15	---	12.0	235	---	114	3.6	4.0	2.60
16	---	12.0	240	---	117	3.2	3.7	2.60
17	250	11.9	250	---	119	2.5	3.2	2.70
18	250	11.3					3.3	2.80
19	250	10.2					3.4	2.80
20	260	9.6					3.2	2.75
21	270	9.2					3.1	2.80
22	260	9.0					(2.8)	2.80
23	250	8.6					(3.0)	2.90

Time: 60.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 16

Thule, Greenland (76.6°N, 68.7°W) October 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00			(5.9)					(2.60)
01			(5.8)					(2.75)
02			(5.4)					(2.65)
03			(5.2)					(2.65)
04			(5.9)					(2.75)
05			(5.0)					(2.60)
06			(5.5)					(2.80)
07			(5.7)					(2.80)
08			6.8					(2.85)
09			(6.8)		(125)	2.0		(2.85)
10			7.6		125	2.0		2.80
11			(7.2)		127	2.0		(2.90)
12			(7.6)		127	(2.1)		(2.75)
13			7.6		120	---		(2.70)
14			(7.9)		---	---		(2.80)
15			(7.8)		---	---		(2.70)
16			(7.4)					2.75
17			(7.4)					2.70
18			(7.4)					2.60
19			7.2					2.70
20			(6.4)					2.70
21			(6.6)					(2.65)
22			(6.4)					(2.80)
23			(5.8)					(2.70)

Time: 75.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 17

Point Barrow, Alaska (71.3°N, 156.8°W) October 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.6					6.1	(2.75)
01		(4.4)					5.2	(2.80)
02		(5.2)					4.5	(2.70)
03		(3.9)					3.8	---
04		(4.2)					2.9	---
05		(4.4)					2.8	(2.50)
06		(4.3)					3.0	(2.60)
07		(4.7)					3.3	(2.70)
08		5.1					3.2	(2.85)
09		6.8			122	2.0	3.0	3.00
10		7.1			117	2.3	2.4	3.00
11		7.8			115	2.4		3.00
12		8.2			119	2.5		3.00
13		8.6			117	2.4		2.95
14		9.5			117	2.3		2.95
15		10.0			120	2.1		3.00
16		9.7			129	1.9		3.00
17		9.4			---	2.0		3.00
18		7.9			---	---		3.00
19		6.3					2.4	2.90
20		4.3					3.5	2.80
21		(4.2)					3.5	(2.80)
22		(4.2)					4.3	(2.80)
23		(4.4)					5.0	(2.70)

Time: 150.0°W.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 18

Baguio, P. I. (16.4°N, 120.6°E) October 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		230	13.5					3.20
01		220	12.6				2.0	3.20
02		210	11.2					3.30
03		210	7.8					3.05
04		230	6.4					3.00
05		240	5.8					2.90
06		270	7.5					2.90
07		240	10.7		111	(2.7)	3.5	3.00
08		230	13.0	---	109	(3.2)	4.6	2.90
09		---	14.8	230	---	107	(3.6)	2.65
10		---	15.2	215	---	(107)	(3.9)	2.45
11		---	13.6	215	---	107	4.0	2.30
12		---	13.3	215	---	---	(4.0)	2.25
13		---	13.5	220	---	107	4.0	2.30
14		---	14.3	220	---	108	3.9	2.40
15		---	14.9	230	---	108	3.6	2.40
16		240	15.1	240	---	111	3.0	2.40
17		260	14.5		115	2.2	3.3	2.40
18		310	14.0				3.0	2.35
19		380	>12.0					(2.25)
20		320	(12.6)				2.0	(2.45)
21		270	(13.0)				2.5	(2.70)
22		240	13.5				2.5	2.90
23		230	14.0					3.00

Time: 120.0°E.  
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 19

De Bilt, Holland (52.1°N, 5.2°E)

September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.5						2.6
01	310	5.2						2.5
02	315	4.8						2.5
03	315	4.6						2.5
04	305	4.4						2.5
05	270	4.9					3.0	2.8
06	250	6.0	240	---	120	2.1		3.0
07	230	7.4	230	4.3	110	2.8	3.3	3.0
08	250	8.3	220	4.7	105	3.2	3.5	3.0
09	250	8.6	215	5.2	100	3.5	3.9	2.9
10	270	9.4	220	5.0	100	3.6	4.0	2.9
11	300	9.6	220	5.6	100	3.8	3.9	2.9
12	320	10.0	220	6.0	100	3.8	3.8	2.85
13	300	9.4	220	5.5	100	3.7	3.8	2.8
14	275	9.7	220	5.4	100	3.5		2.8
15	240	9.6	230	4.9	105	3.2	3.5	2.9
16	240	9.5	230	4.3	110	2.9	3.3	2.9
17	250	9.6	---	---	115	2.3		3.2
18	240	9.4						3.0
19	240	8.7						2.9
20	240	7.4						2.8
21	270	6.6						2.8
22	280	6.0						2.7
23	300	5.8						2.6

Time: 0.0°.

Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 20

Huancayo, Peru (12.0°S, 75.3°W)

September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	9.0						3.00
01	230	8.7						3.00
02	230	8.0						3.00
03	230	7.4						3.10
04	240	6.0						3.10
05	240	5.0						3.15
06	270	6.8						2.95
07	240	10.5			113	2.8	6.8	3.00
08	---	12.5	225	---	---	3.3	9.6	2.75
09	---	13.4	215	---	---	---	12.6	2.50
10	---	13.5	205	---	---	---	13.2	2.30
11	---	12.0	200	---	---	---	13.5	2.20
12	---	11.8	200	---	---	---	13.7	2.20
13	---	11.6	200	---	---	---	13.4	2.15
14	---	11.5	200	---	---	---	13.0	2.15
15	---	11.4	210	---	---	---	12.0	2.15
16	230	11.3	225	---	---	---	10.1	2.20
17	260	10.9					8.2	2.25
18	300	10.2					2.6	2.20
19	420	9.3						2.10
20	420	9.0						2.20
21	300	9.1						2.50
22	260	9.7						2.75
23	230	9.2						2.95

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 21

Point Barrow, Alaska (71.3°N, 156.8°W)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(5.3)			---	---	3.8	(2.90)
01		(5.0)			---	---	4.0	---
02		(5.7)			---	---	4.3	---
03		(5.5)			---	---	3.9	---
04		(5.3)			---	---	3.5	---
05		(5.5)			115	(2.2)	3.2	(2.80)
06		(6.5)		(4.0)	114	(2.5)	4.0	---
07		(5.4)		(4.0)	111	(2.8)	4.0	(2.55)
08		(5.8)		(4.4)	111	3.0	3.6	(2.55)
09		5.8		4.4	109	3.2	3.5	(2.60)
10		(6.0)		4.7	107	3.3		(2.60)
11		5.9		4.7	106	3.4		2.55
12		5.9		4.7	107	3.4		2.55
13		5.9		4.8	111	(3.3)		2.55
14		5.9		4.7	111	3.2		2.50
15		6.3		(4.7)	111	3.2		2.60
16		6.2		4.6	111	3.0		2.70
17		6.2		(4.2)	111	2.9		2.75
18		6.2		---	111	(2.7)		2.70
19		6.2		---	114	(2.3)	2.9	2.90
20		5.8		---	117	(2.2)	3.5	2.90
21		(5.2)		---	---	---	3.0	(2.95)
22		(5.0)		---	---	---	4.2	(2.90)
23		(5.0)		---	---	---	3.8	

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 22

Tromsø, Norway (69.7°N, 19.0°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(310)	5.60					3.2	(2.50)
01	(290)	5.50					3.6	(2.55)
02	(300)	5.80					3.8	2.55
03	(295)	5.80	---	---	---	---	4.0	2.60
04	(295)	5.85	---	---	---	---	4.0	2.70
05	(355)	6.10	250	---	100	2.45		2.75
06	(405)	6.05	245	4.20	100	2.60	2.8	(2.70)
07	(440)	6.25	245	4.50	100	2.90	3.0	2.70
08	390	6.50	240	4.75	100	3.00	3.2	2.70
09	395	6.75	245	4.90	100	3.10	3.4	2.70
10	350	6.80	220	4.90	100	3.20	3.6	2.70
11	430	6.90	225	4.95	100	3.20	3.9	2.70
12	(420)	7.00	215	4.80	100	3.15	4.0	2.70
13	(450)	7.00	215	---	100	3.20	3.6	2.70
14	(405)	6.95	220	4.90	100	3.20		2.70
15	---	6.75	235	---	100	3.10		2.70
16	(460)	6.50	245	4.40	100	3.00		2.70
17	---	6.40	245	---	100	2.80	3.1	2.90
18	---	6.10	250	---	105	2.60	3.2	2.85
19	(265)	6.30	255	---	105	2.20	3.0	2.80
20	280	6.15	---	---	105	---	2.9	2.70
21	(270)	5.80	---	---	---	---	3.2	2.70
22	(280)	6.25	---	---	---	---	3.2	2.60
23	(280)	(6.40)					3.2	(2.70)

Time: 15.0°E.

Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 23

Godhavn, Greenland (69.2°N, 53.5°W)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(5.6)						(2.65)
01		(4.9)						---
02		(5.0)						(2.80)
03		(4.7)						---
04		(4.9)		---	---	---		---
05		(5.1)		---	120	(2.1)		---
06		(5.4)		(3.3)	115	(2.3)		---
07		(6.0)		3.9	111	(2.6)		---
08		(6.2)		4.2	109	2.9		---
09		(6.6)		(4.4)	109	(3.0)		---
10		(6.8)		(4.5)	107	(3.2)	3.5	(2.75)
11		(6.8)		(4.8)	107	3.2	3.4	(2.70)
12		(6.8)		(4.8)	107	(3.2)	3.7	(2.70)
13		(6.5)		(4.7)	105	3.3	3.6	---
14		(6.5)		4.7	105	3.2	4.0	(2.75)
15		(6.3)		4.7	107	3.2	3.5	(2.75)
16		(6.1)		4.5	107	3.0	4.9	(2.80)
17		6.2		4.3	109	2.8	3.9	2.80
18		6.3		4.2	(113)	2.6	3.9	2.70
19		(6.2)		---	(113)	2.4	3.2	2.75
20		(5.8)		---	(121)	(2.2)	3.1	(2.75)
21		(5.6)		---	---	---		(2.75)
22		(5.9)					2.5	(2.80)
23		(5.6)						(2.70)

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 24

Kiruna, Sweden (67.8°N, 20.3°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	315	5.2					4.5	2.6
01	310	(6.0)					4.0	2.6
02	310	(5.8)					3.2	2.6
03	290	5.7				E	3.4	2.75
04	285	5.8	250	---	---	E	<3.2	2.7
05	(455)	5.9	255	4.0	100	2.0	3.0	2.75
06	(415)	6.0	240	4.2	105	2.4	<3.5	2.7
07	360	6.6	240	4.4	100	2.8	<3.2	2.7
08	360	6.8	230	4.8	100	3.0	<4.0	2.7
09	390	6.9	220	4.9	100	3.0	4.1	2.7
10	355	7.0	220	5.0	100	3.1	4.1	2.7
11	350	7.0	210	5.0	100	3.1	4.9	2.7
12	385	7.0	210	5.0	100	3.1	<4.8	2.7
13	(390)	7.2	210	5.0	100	3.0	4.0	2.7
14	(420)	7.0	215	5.0	100	3.0	4.0	2.7
15	(395)	6.8	220	4.9	105	3.0	3.9	2.8
16	(350)	6.6	230	4.6	100	2.9	4.0	2.8
17	---	6.8	240	4.3	100	2.7	4.0	2.85
18	---	6.5	245	---	105	2.4	4.0	2.9
19	270	6.4	250	---	---	1.7	3.5	2.9
20	265	6.4	---	---	---	E	3.2	2.8
21	275	6.1	---	---	---	E	4.0	2.8
22	300	(6.0)					4.5	2.7
23	300	5.8					4.8	2.7

Time: 15.0°E.

Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 25

De Bilt, Holland (52.1°N, 5.2°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.2						2.7
01	300	5.9						2.7
02	300	5.7						2.6
03	295	5.2						2.6
04	290	5.0					2.2	2.8
05	250	5.7	240	---	110	2.1	3.2	3.0
06	245	6.4	220	---	100	2.6	4.1	3.0
07	(280)	7.3	220	4.6	100	3.0	4.7	3.0
08	325	7.5	210	5.2	100	3.3	4.1	2.9
09	335	7.7	205	5.3	100	3.5	4.2	2.85
10	310	7.5	200	5.4	100	3.6	4.8	2.9
11	350	8.0	200	5.5	100	3.7	4.4	2.8
12	360	7.8	200	5.6	100	3.7	5.0	2.9
13	350	7.9	210	5.5	100	3.8	4.1	2.8
14	350	7.8	210	5.3	100	3.7	3.8	2.8
15	(350)	8.0	210	5.3	100	3.5	3.8	2.8
16	(340)	8.0	220	5.1	100	3.3	4.0	2.9
17	(260)	8.2	225	---	100	2.8	4.0	2.9
18	250	8.5	---	---	100	2.3	3.9	2.9
19	250	8.2					3.8	2.9
20	240	7.8					3.6	2.9
21	250	7.2					3.4	2.8
22	275	6.7					2.8	2.7
23	285	6.4						2.6

Time: 0.0°.

Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 27

Monte Capellino, Italy (44.6°N, 9.0°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		6.7						
01		6.2						
02		6.2						
03		6.0						
04		5.5						
05		5.6						
06		6.7				2.4		
07		7.5				3.0		
08		8.9				3.4		
09		8.5				3.6		
10		9.4				3.7		
11		9.3				3.8		
12		9.4				3.9		
13		9.3				3.8		
14		9.2				3.8		
15		9.1				3.6		
16		9.0				3.4		
17		8.8				3.0		
18		9.2				2.4		
19		9.3				E		
20		8.8						
21		7.6						
22		6.9						
23		6.8						

Time: Local.

Table 29

Tokyo, Japan (35.7°N, 139.5°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.7					3.0	2.7
01	310	7.5					3.6	2.7
02	300	7.2					3.0	2.7
03	290	6.9					3.0	2.7
04	280	6.5					2.4	2.7
05	280	6.8					2.4	2.7
06	260	8.0	250	---	120	2.4	3.4	2.9
07	260	9.0	240	4.9	120	3.0	3.8	3.0
08	280	9.0	240	5.0	110	3.4	5.2	3.0
09	300	9.0	220	5.5	110	3.7	5.8	2.8
10	310	9.2	220	5.6	110	3.8	6.3	2.7
11	330	9.5	240	5.7	110	3.8	5.7	2.7
12	350	10.0	230	5.6	110	3.8	5.7	2.7
13	350	10.2	240	5.8	110	3.9	5.3	2.7
14	350	10.3	230	5.5	110	3.8	5.7	2.7
15	330	10.1	250	5.5	110	3.7	5.2	2.8
16	320	9.6	250	5.0	120	3.4	5.7	2.8
17	300	9.9	260	---	120	2.8	5.0	2.8
18	280	9.6	260	---	---	1.9	4.4	2.9
19	260	9.0					3.6	2.9
20	280	8.2					3.9	2.7
21	300	8.3					3.4	2.6
22	300	8.1					3.6	2.6
23	310	8.0					3.8	2.65

Time: 135.0°E.

Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 26

Wakkanai, Japan (45.4°N, 141.7°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.0						3.0
01	280	6.8						2.3
02	280	6.5						2.2
03	280	6.4						2.2
04	280	6.1						2.2
05	280	6.4						
06	280	7.3						
07	280	7.8					4.6	
08	290	8.1					5.8	
09	300	8.2					5.5	
10	320	8.0					5.0	
11	320	8.3						
12	350	8.5						
13	340	8.3						
14	320	8.5						
15	310	8.2						
16	300	8.3						
17	280	8.3					4.1	
18	260	8.3					3.5	
19	260	8.0					3.5	
20	270	7.9					4.4	
21	280	7.6					4.5	
22	290	7.3					4.0	
23	280	7.3					3.2	

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 28

Akita, Japan (39.7°N, 140.1°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.4					3.5	
01	300	6.9					3.1	
02	290	6.7					3.2	
03	280	6.6					3.1	
04	290	6.3					3.1	
05	280	6.5					3.2	
06	260	8.0					3.5	
07	270	8.6					4.1	
08	280	8.7					5.2	
09	310	8.6					5.4	
10	330	8.9					5.6	
11	350	9.0					4.9	
12	350	9.1					4.5	
13	350	9.0					4.4	
14	340	9.4						
15	340	9.2					4.3	
16	310	9.0					4.3	
17	290	8.9					4.4	
18	280	9.0					4.0	
19	260	8.5					3.5	
20	280	8.0					4.2	
21	300	8.0					4.2	
22	300	7.7					4.0	
23	300	7.5					3.5	

Time: 135.0°E.

Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 30

Yamagawa, Japan (31.2°N, 130.6°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.9					3.2	
01	290	8.0					3.1	
02	280	7.8					3.0	
03	250	7.4					2.4	
04	260	7.2					2.3	
05	260	6.8					2.3	
06	250	7.6					2.3	
07	240	8.7						
08	250	9.0					4.6	
09	260	9.0					5.7	
10	290	9.2					5.9	
11	320	10.0					5.9	
12	340	10.6					5.9	
13	340	11.1					5.9	
14	340	11.6					5.9	
15	330	11.7					5.9	
16	310	11.6					5.9	
17	290	11.8					5.0	
18	270	11.6					3.8	
19	250	10.4					3.4	
20	250	9.0					3.5	
21	280	8.6					3.1	
22	300	8.3					3.1	
23	290	8.4					3.1	

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.



Table 31  
Baguio, P. I. (16.4°N, 120.6°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	11.7						3.00
01	240	11.0						3.15
02	230	10.3						3.20
03	220	8.8						3.20
04	220	7.4					1.3	3.15
05	220	6.0					2.0	3.15
06	250	7.0					3.0	3.10
07	230	8.7	---	---	111	(2.8)	5.1	3.10
08	220	9.3	---	---	108	(3.3)	6.8	2.75
09	---	10.1	210	---	109	(3.7)	6.4	2.50
10	---	10.8	210	---	107	3.9	5.7	2.30
11	---	11.4	210	---	107	4.0	5.9	2.30
12	---	11.5	205	---	107	(4.1)	5.4	2.20
13	---	11.6	210	---	107	4.0	5.2	2.20
14	(430)	11.7	210	---	108	4.0	4.7	2.25
15	(400)	11.8	210	---	107	3.8	5.2	2.30
16	(240)	12.0	220	---	107	3.3	4.8	2.40
17	240	11.9	---	---	109	(2.7)	4.2	2.45
18	270	11.7			---	---	4.2	2.45
19	320	11.2						2.40
20	350	10.4					2.2	2.35
21	300	10.4					2.0	2.55
22	290	11.2						2.70
23	280	11.5						2.85

Time: 120.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 33

Johannesburg, Union of S. Africa (26.2°S, 28.1°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<260	3.3						2.8
01	---	3.3						2.8
02	<260	3.4						2.9
03	240	3.3						3.0
04	---	3.2						2.8
05	---	3.1						2.8
06	250	3.3						2.9
07	230	7.1			130	2.2		3.3
08	230	9.1	230	---	110	2.8		3.3
09	250	9.9	220	4.4	110	3.3		3.2
10	260	11.0	220	5.0	110	3.6		3.1
11	260	11.4	210	5.0	110	3.8		3.0
12	260	11.4	210	5.0	110	3.9		2.9
13	270	11.1	200	4.9	110	3.8	4.2	2.9
14	260	11.0	220	5.0	110	3.7	4.2	2.8
15	260	10.9	220	---	110	3.5	4.2	2.8
16	250	10.8	230	---	120	3.1	3.7	2.8
17	250	11.0	240	---	120	2.4	2.8	2.9
18	230	10.6			---	---	2.2	3.1
19	220	8.6						3.1
20	230	6.5						3.1
21	230	5.1						3.2
22	240	3.8						3.1
23	<250	3.4						2.9

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 35

Buenos Aires, Argentina (34.5°S, 58.5°W)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	7.5						2.9
01	260	7.1						3.0
02	240	6.7						3.0
03	220	6.4						3.2
04	200	5.1						3.2
05	240	4.0						3.0
06	250	4.2						3.0
07	210	7.5						3.4
08	210	9.4	---	---				3.4
09	220	9.7	200	---				3.3
10	250	10.4	210	---	---	---		3.2
11	250	11.1	210	---				3.2
12	260	11.2	210	---				3.1
13	270	11.0	210	---				3.0
14	260	11.2	210	---				3.1
15	240	11.1	210	---				3.1
16	220	11.0	220	---				3.1
17	210	10.9						3.3
18	200	10.1						3.3
19	210	10.1						3.15
20	210	9.0						3.2
21	210	9.3						3.1
22	220	8.7						3.1
23	240	8.0						3.0

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 32

Talara, Peru (4.6°S, 81.3°W)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	10.3						3.00
01	230	9.6						3.10
02	230	8.8						3.15
03	240	7.8						3.15
04	240	6.2						3.15
05	230	4.9					2.0	3.20
06	250	4.0					2.2	3.10
07	260	6.6			129	2.1		3.00
08	240	8.4	235	---	115	3.0		2.80
09	---	9.4	225	---	113	3.4	4.0	2.50
10	---	10.0	215	---	113	3.7		2.35
11	---	10.3	210	---	111	4.0		2.20
12	---	10.7	205	---	111	4.0		2.15
13	---	11.0	200	---	111	4.0		2.10
14	---	11.0	205	---	111	3.9	4.4	2.20
15	---	11.0	205	---	111	3.7	4.6	2.10
16	---	10.9	215	---	111	3.4	4.0	2.20
17	240	11.0	235	---	115	2.9	3.1	2.25
18	270	10.7			---	---		2.30
19	340	(10.3)					2.5	(2.35)
20	400	10.2						2.30
21	310	10.2						2.50
22	260	(10.3)						2.70
23	230	10.8						2.90

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 34

Capetown, Union of S. Africa (34.2°S, 18.3°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(260)	3.0						2.8
01	---	3.0						2.7
02	---	3.1						2.8
03	<260	3.2						2.9
04	<270	3.1						2.9
05	(250)	3.1						2.8
06	250	3.0						2.9
07	250	3.8						2.9
08	230	7.3	---	---	130	2.3		3.3
09	250	8.7	240	---	120	2.9		3.2
10	250	9.6	230	---	110	3.2		3.1
11	260	10.9	230	---	110	3.5		3.0
12	260	(11.4)	220	---	110	3.6		(2.9)
13	260	(11.8)	220	---	110	3.7		(2.8)
14	260	(11.9)	220	---	120	3.6	3.9	(2.8)
15	260	11.5	230	---	120	3.5	3.8	2.8
16	250	(11.8)	240	---	120	3.2	3.3	(2.8)
17	250	11.4	240	---	120	2.7	3.2	2.9
18	240	10.9	---	---	120	2.1		3.0
19	220	9.6						3.05
20	220	6.6						3.1
21	230	4.5					1.6	3.2
22	<240	3.3						3.1
23	250	2.9						2.9

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 36

Christchurch, New Zealand (43.6°S, 172.8°E)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	5.2					<1.6	2.6
01	280	5.0					<1.6	2.7
02	280	4.9					<1.6	2.7
03	270	4.5					<1.4	2.7
04	260	4.4					<1.4	2.85
05	260	4.0					<1.2	2.8
06	250	3.9					<1.4	2.9
07	250	5.8					(1.8)	3.1
08	240	8.0	---	---			2.5	3.3
09	240	9.3	230	---			3.0	3.3
10	240	9.8	220	---			3.2	3.2
11	250	10.3	230	---			3.4	3.1
12	250	10.6	220	---			3.5	3.1
13	250	10.4	230	4.5			3.5	3.0
14	250	10.0	220	---			3.3	3.0
15	250	9.5	230	---			3.0	3.1
16	240	9.1	---	---			(2.7)	3.1
17	240	8.6					(2.2)	3.0
18	240	8.0						<1.9
19	250	7.3						<1.7
20	250	6.6						<1.7
21	270	6.0						<1.7
22	280	5.8						<1.6
23	280	5.4						<1.7

Time: 172.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.



Table 37

Deception I., (63.0°S, 60.7°W)

August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	390	3.0					10.0	2.9
01	390	3.2						2.9
02	390	3.0					10.0	2.85
03	380	2.8						2.9
04	400	2.8						2.9
05	360	2.8						3.0
06	330	2.9						3.1
07	310	2.9				10.0		3.3
08	260	3.8				6.2		3.5
09	220	6.0						3.6
10	220	7.5					3.7	3.8
11	220	8.0					3.7	3.8
12	220	8.2					3.6	3.8
13	220	9.0					5.2	3.8
14	220	8.6					5.4	3.8
15	220	8.8					4.6	3.8
16	230	7.9				10.0		3.8
17	220	7.0				4.6		3.7
18	220	6.6				10.0		3.7
19	220	4.4				10.0		3.7
20	250	3.9				10.0		3.5
21	300	3.6						3.3
22	320	3.6					3.5	3.1
23	350	3.2						3.0

Time: 60.0°W.

Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 38

Resolute Bay, Canada (74.7°N, 94.9°W)

July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.2		3.3	105	2.2		2.9
01		5.6		3.3	105	2.2		(2.9)
02		5.4		3.4	110	2.2		2.8
03		5.3		3.5	105	2.3		(3.0)
04		5.3		3.8	105	2.5		2.9
05		5.2		4.0	105	2.8		(2.9)
06		5.1		4.0	100	2.9		(2.85)
07		5.2		4.2	100	3.0		(2.95)
08		5.1		4.3	100	3.0	3.6	---
09		5.2		4.3	100	3.2		6
10		5.3		4.4	100	3.2		6
11		5.2		4.5	100	3.3		---
12		5.3		4.5	100	3.3		---
13		5.3		4.6	100	3.3		---
14		5.2		4.6	100	3.3		---
15		5.3		4.5	100	3.2		---
16		5.6		4.5	100	3.2		---
17		5.3		4.3	100	3.0		(2.7)
18		5.6		4.2	100	3.0		(2.7)
19		5.4		4.0	105	2.7		(2.8)
20		5.5		4.0	105	2.7		(2.9)
21		5.3		3.8	105	2.5		(2.9)
22		5.5		3.6	110	2.3		(2.9)
23		5.3		3.4	110	2.2		(2.9)

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 39

Point Barrow, Alaska (71.3°N, 156.8°W)

July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(5.4)	---	(115)	(2.0)	5.0		(2.90)
01		(4.8)	---	---	(2.0)	4.2		---
02		(5.0)	---	---	---	5.0		(2.85)
03		(5.2)	---	---	(2.2)	4.0		(2.65)
04		(5.2)	(3.6)	120	2.2	3.9		---
05		(5.6)	(3.8)	113	(2.4)	4.0		---
06		(5.7)	(4.0)	109	2.7	3.3		(2.55)
07		(5.4)	(4.1)	109	3.0	3.7		(2.50)
08		(5.7)	>4.3	109	3.2	3.8		(2.50)
09		4.8	4.6	107	3.2	4.1		2.45
10		(5.4)	4.7	109	3.4	3.7		2.40
11		(5.3)	4.7	109	(3.4)			2.45
12		(5.6)	4.8	109	(3.4)			2.40
13		5.8	4.8	107	3.5			2.45
14		(5.9)	4.7	109	3.4			(2.55)
15		6.0	4.7	109	3.3			2.60
16		6.0	(4.6)	109	3.2			2.60
17		5.8	4.4	109	3.0			(2.60)
18		(5.8)	(4.2)	111	2.9			(2.75)
19		5.6	(4.0)	111	(2.7)			2.80
20		5.5	(3.9)	115	(2.5)	3.2		2.90
21		(5.5)	---	117	2.4	3.3		(2.90)
22		(5.4)	---	119	(2.5)	4.2		(2.90)
23		(5.2)		(127)	(2.4)	4.3		(2.85)

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 40

Baker Lake, Canada (64.3°N, 96.0°W)

July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.2				1.4	1.6	2.8
01		5.0				(1.3)	1.7	2.8
02		4.9				(1.5)	<2.0	2.8
03		4.9			110	1.8	1.9	2.9
04		5.0		3.4	105	2.0		2.8
05		5.0		3.8	105	2.3		2.9
06		5.1		4.0	105	2.5		2.6
07		5.2		4.3	105	3.0		(2.6)
08		5.2		4.5	100	3.2		2.65
09		5.3		4.6	100	3.5		2.4
10		5.4		4.8	100	3.6		(2.55)
11		5.4		4.8	100	3.7		2.4
12		5.9		4.8	100	3.8		2.6
13		6.2		4.9	100	3.8		2.6
14		6.2		4.8	100	3.7		2.6
15		6.5		4.8	100	3.5		2.6
16		6.2		4.8	100	3.4		2.7
17		6.0		4.6	100	3.2		2.7
18		6.0		4.5	110	3.0		2.7
19		6.0		4.2	110	2.7	4.8	2.8
20		5.9		(3.8)	110	2.4	6.4	2.9
21		5.6		---	110	2.0	5.6	2.8
22		5.6			110	1.8	5.4	2.9
23		5.4			115	1.4	5.0	2.9

Time: 90.0°W.

Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 41

Churchill, Canada (58.8°N, 94.2°W)

July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.0					6.0	---
01		5.0			---	---	6.0	---
02		5.0			---	---	6.0	---
03		4.8			---	---	5.2	---
04		4.9		110	2.4	4.6	---	---
05		4.9		3.6	110	2.6	4.5	---
06		5.0		4.2	105	3.2	5.0	6
07		5.4		4.5	100	3.4	4.7	2.65
08		5.5		4.7	100	3.5	4.9	2.55
09		6.0		4.8	100	3.5	4.8	2.7
10		6.0		5.0	100	3.6	4.2	2.6
11		6.1		5.0	100	3.7		2.7
12		6.1		5.0	100	3.8		2.6
13		6.2		5.0	100	3.7		2.6
14		6.4		5.0	100	3.6		2.7
15		6.5		4.9	100	3.5		2.8
16		6.6		4.8	105	3.4		2.7
17		6.5		4.7	105	3.2		2.7
18		6.3		4.5	110	3.0		2.7
19		6.0		4.0	110	2.9	4.2	2.9
20		6.0		---	115	2.9	4.5	2.8
21		5.4		---	110	2.5	6.0	(2.85)
22		5.2		---	---	---	8.0	---
23		5.0		---	---	---	9.6	---

Time: 90.0°W.

Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 42

Winnipeg, Canada (49.9°N, 97.4°W)

July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.3					<1.9	(2.80)
01		4.2					2.8	(2.70)
02		3.9					3.0	(2.70)
03		3.8					2.9	---
04		3.8					3.0	(2.70)
05		4.4			130	1.9		2.7
06		5.0		3.7	115	2.5		2.80
07		5.2		4.2	110	2.9		2.70
08		5.4		4.5	110	3.2		2.60
09		5.5		4.8	110	3.4		2.50
10		5.8		4.9	105	3.6		2.50
11		6.0		4.9	105	3.8		2.50
12		6.0		5.0	105	3.9		2.50
13		6.0		5.0	110	3.9		2.50
14		6.0		5.0	110	3.9		2.50
15		6.2		4.9	110	3.7		2.50
16		6.0		4.9	110	3.5		2.60
17		6.3		4.7	110	3.2		2.65
18		6.3		4.3	110	3.0		2.60
19		6.4			120	2.5		2.80
20		6.7			130	2.0	2.0	2.80
21		6.3			---	---	<1.6	2.80
22		5.9					<1.5	2.70
23		5.0					<1.8	(2.70)

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 43

Ottawa, Canada (45.4°N, 75.9°W)								July 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.2					2.8	2.7
01		4.8					3.0	2.8
02		4.0					3.0	2.7
03		3.7					2.7	2.8
04		3.7					<1.6	2.8
05		4.3			120	2.0	2.9	2.9
06		5.0		3.9	110	2.7	2.9	2.9
07		5.5		4.4	105	3.0	2.9	2.9
08		5.8		4.8	105	3.4	2.8	2.8
09		6.0		5.0	105	3.6	2.75	2.75
10		6.2		5.0	105	3.9	2.65	2.65
11		6.2		5.1	105	4.0	2.7	2.7
12		6.2		5.1	105	4.0	2.7	2.7
13		6.6		5.1	105	4.0	2.7	2.7
14		6.6		5.0	105	3.9	2.7	2.7
15		6.7		5.0	105	3.8	2.7	2.7
16		6.8		4.9	105	3.6	2.7	2.7
17		6.9		4.7	105	3.1	2.8	2.8
18		6.9		4.1	110	2.8	2.8	2.8
19		7.0		3.2	115	2.1	<3.0	2.9
20		7.0				1.6	<1.7	2.9
21		7.0					<1.6	2.9
22		6.4					<1.6	2.8
23		5.8					<1.7	2.8

Time: 75.0°W.

Sweep: 1.0 Mc to 15.0 Mc in 15 seconds.

Table 45

Leopoldville, Belgian Congo (4.4°S, 15.2°E)								July 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	210	9.0					2.5	2.9
01	220	6.6					2.7	2.7
02	230	6.0					2.6	2.7
03	240	5.0					2.3	2.7
04	235	3.7					2.6	2.8
05	260	5.0					2.4	2.7
06	255	8.7	240		110	2.5	3.0	2.9
07	265	10.7	235		110	3.1	4.0	2.9
08	275	11.0	220		105	3.6	4.5	2.8
09	280	11.0	215		105	3.8	4.6	2.7
10	300	11.0	210	5.0	105	4.0	4.5	2.6
11	340	11.5	210		105	3.9	4.4	2.5
12	340	11.8	250	5.2	105	3.8	4.5	2.4
13	365	12.6	250	5.5	105	3.7	4.5	2.4
14	350	13.0	250		105	3.5	4.2	2.4
15	320	13.1	230		105	3.1	3.8	2.4
16	290	13.5	240		110	2.5	3.5	2.5
17	250	>13.8					3.5	2.7
18	240	>14.0					3.2	<2.8
19	240	>13.5					3.0	<3.0
20	210	>13.2					2.4	<2.9
21	210	>13.2					2.2	2.8
22	220	>13.2					2.8	2.9
23	210	>11.2					2.5	2.9

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 47

Rarotonga I. (21.3°S, 159.8°W)								July 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.4					1.8	2.8
01	270	5.5					2.9	2.9
02	250	4.8					3.0	3.0
03	250	4.1					3.1	3.1
04	250	3.4					2.9	2.9
05	300	3.1					1.7	2.7
06	290	3.6					2.8	2.8
07	260	7.0					1.9	3.2
08	250	9.7	250	4.0	115	2.6	3.3	3.3
09	260	11.4	240	5.0	110	3.1	4.5	3.2
10	250	11.6	240	5.0	110	3.5	3.3	3.3
11	260	10.3	220	5.2	110	3.6	5.0	3.2
12	270	9.5	220	5.3	110	3.7	3.1	3.1
13	280	10.0	220	5.4	110	3.7	5.2	3.0
14	300	10.1	240	5.3	110	3.5	4.0	3.0
15	300	10.5	250	5.2	110	3.4	4.7	3.0
16	270	10.1	240	4.6	115	3.0	4.2	3.0
17	260	(9.8)			120	2.2	3.5	(3.1)
18	250	(9.7)					3.0	(3.1)
19	240	8.5					3.5	3.0
20	250	7.5					2.4	3.0
21	250	7.5					2.2	2.8
22	250	6.8					2.0	2.9
23	260	6.0					1.8	2.85

Time: 157.5°W.

Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 44

Monte Capellino, Italy (44.6°N, 9.0°E)								July 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		7.2						
01		7.1						
02		6.8						
03		6.2						
04		5.8						
05		5.6					2.0	
06		6.1					2.7	
07		6.4					3.2	
08		7.0					3.4	
09		7.9					3.6	
10		8.0					3.6	
11		8.2					3.8	
12		8.3					3.8	
13		8.2					3.7	
14		8.0					3.7	
15		8.0					3.6	
16		7.8					3.5	
17		7.9					3.2	
18		8.5					2.7	
19		8.6					2.0	
20		(7.6)						
21		7.0						
22		7.2						
23		7.1						

Time: Local.

Table 46

Elisabethville, Belgian Congo (11.6°S, 27.5°E)								July 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	3.0					1.8	2.75
01	250	2.7						2.7
02	300	2.3					1.6	2.55
03	285	2.3					2.7	2.7
04	255	3.0						2.65
05	240	7.2	250		120	2.1	2.5	3.0
06	250	9.2	230		110	3.0		3.0
07	260	10.2	230		110	3.3		3.0
08	260	10.0	220		105	3.6		2.9
09	275	10.1	215	5.0	105	3.8		2.8
10	290	10.0	220	5.0	100	3.8		2.7
11	300	10.1	220	4.9	105	3.7		2.6
12	315	10.2	230	5.0	105	3.7	3.9	2.5
13	305	10.2	240		110	3.5	3.8	2.5
14	300	10.1	230		110	3.1	3.8	2.6
15	260	10.2	245		110	2.6	3.7	2.7
16	240	10.5					3.0	2.8
17	225	10.2					2.9	3.0
18	220	8.3					3.0	3.0
19	220	7.0					2.7	2.8
20	230	6.7					2.3	2.7
21	230	5.8					2.2	2.8
22	230	4.6					1.8	2.7
23	240	3.8					2.0	2.7

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 48

Watheroo, W. Australia (30.3°S, 115.9°E)								July 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	4.0						2.8
01	250	3.8						2.8
02	250	4.0					1.2	2.9
03	250	4.1					1.3	3.0
04	230	3.9						3.1
05	220	3.7						3.1
06	240	3.5						2.95
07	240	4.7					1.6	3.2
08	220	7.7					2.6	3.5
09	230	9.0	220	4.0		3.0		3.5
10	240	10.0	210	4.4		3.3	3.7	3.35
11	240	9.6	200	4.7		3.6		3.3
12	250	9.6	200	4.7		3.6	3.8	3.2
13	250	9.7	200	4.8		3.6	3.8	3.2
14	250	9.7	200	4.6		3.5	3.8	3.1
15	250	9.6	220	4.4		3.3	3.8	3.1
16	230	9.6	220	3.7		3.0	3.7	3.2
17	220	9.2				2.3	2.4	3.2
18	210	7.3					2.1	3.2
19	210	6.0						3.1
20	220	4.8						3.2
21	240	4.2						3.1
22	240	4.0						3.0
23	250	4.0						2.9

Time: 120.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 49

Deception I. (63.0°S, 60.7°W)

July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	400	2.6					3.4	2.9
01	390	2.7					3.2	2.9
02	380	2.8					3.4	3.0
03	390	2.7					3.0	3.0
04	380	2.6					2.8	3.0
05	360	2.6					2.8	3.0
06	320	2.7					2.8	3.2
07	330	2.8					3.4	3.4
08	300	3.0					2.9	3.3
09	250	3.9					3.4	3.7
10	(220)	(5.3)					3.4	(3.8)
11	(220)	(5.8)					3.4	(3.7)
12	(220)	(6.1)					3.4	(3.7)
13	(210)	(6.6)					3.4	(3.9)
14	230	(7.1)					3.4	(3.9)
15	(220)	(7.4)					(3.8)	(3.8)
16	(220)	(6.4)					(3.2)	(3.8)
17	(220)	(5.2)					3.2	(3.6)
18	220	4.4					3.1	3.7
19	250	3.4						3.7
20	300	3.0						3.4
21	340	2.6						3.2
22	380	2.6						3.0
23	390	2.6						2.9

Time: 60.0°W.

Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 50

Monte Capellino, Italy (44.6°N, 9.0°E)

June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		7.0						
01		6.9						
02		6.8						
03		6.5						
04		6.2					----	
05		6.7					2.20	
06		7.0					2.75	
07		7.5					3.20	
08		8.4					3.40	
09		8.6					3.55	
10		8.3					3.60	
11		8.3					3.70	
12		8.4					3.70	
13		8.6					3.70	
14		8.0					3.60	
15		7.9					3.60	
16		8.0					3.40	
17		8.2					3.10	
18		8.2					2.70	
19		8.2					2.00	
20		(8.8)						
21		8.2						
22		8.0						
23		7.3						

Time: Local.

Table 51

Sao Paulo, Brazil (23.5°S, 46.5°W)

June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	7.0					<2.1	3.1
01	240	6.3					<2.1	3.15
02	240	5.7						3.2
03	240	5.4						3.15
04	<260	4.5						3.0
05	260	4.0						2.9
06	280	3.3						2.9
07	250	7.0					<2.2	3.3
08	240	8.6	240	---	<125	2.6		3.3
09	270	10.4	230	---	120	3.0		3.1
10	270	11.8	220	---	120	3.3		3.1
11	280	11.9	210	4.5	120	3.5		3.0
12	260	12.5	210	4.5	120	3.6		2.9
13	260	13.0	210	4.4	120	3.5		2.9
14	260	13.0	220	4.0	120	3.3		2.9
15	280	13.6	240	(3.8)	120	3.0		2.9
16	260	13.8	240	---	<130	2.6	2.8	3.0
17	240	13.4					<2.2	3.1
18	220	12.1					<2.5	3.3
19	220	10.4					<2.2	3.3
20	230	9.0					<2.1	3.05
21	240	9.2					<2.5	3.1
22	230	8.8					<2.2	3.2
23	230	7.8					<2.0	3.2

Time: Local.

Sweep: 1.75 Mc to 20.0 Mc in 7 minutes 18 seconds.

Table 52

Christchurch, New Zealand (43.6°S, 172.8°E)

June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.8						2.8
01	300	3.7						2.8
02	300	3.6						2.8
03	290	3.8						2.9
04	280	3.7						3.0
05	260	3.4						3.0
06	250	3.0						3.0
07	250	3.5						3.1
08	230	6.5			120	1.8		3.4
09	230	8.2	240	---	120	2.5		3.4
10	230	9.0	230	---	120	2.9		3.4
11	230	9.4	240	4.0	120	3.0		3.3
12	240	9.6	230	(4.4)	115	3.0		3.3
13	250	10.0	240	(4.5)	120	3.0	3.7	3.25
14	240	9.6	240	3.9	120	2.9		3.3
15	240	(9.2)	240	3.4	120	2.4		3.3
16	230	8.7			120	1.8		3.3
17	230	7.0						3.1
18	250	6.2						3.05
19	250	5.5						3.0
20	260	4.8						3.0
21	270	4.5						3.0
22	290	4.2						2.85
23	300	3.9						2.9

Time: 172.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 53

Monte Capellino, Italy (44.6°N, 9.0°E)

May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		7.1						
01		7.0						
02		6.6						
03		6.2						
04		6.0						
05		6.2				2.00		
06		7.0				2.60		
07		7.0				3.10		
08		8.0				3.30		
09		8.2				3.50		
10		9.2				3.65		
11		9.4				3.80		
12		9.6				3.80		
13		9.8				3.70		
14		9.3				3.60		
15		9.0				3.60		
16		8.8				3.40		
17		8.6				3.00		
18		8.6				2.30		
19		(9.1)						
20		8.4						
21		8.2						
22		(7.8)						
23		7.0						

Time: Local.

Table 54

Rarotonga I. (21.3°S, 159.8°W)

May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	5.4						2.9
01	270	5.1						2.9
02	280	4.7						2.8
03	280	4.7						2.9
04	250	3.8						2.75
05	300	3.9						2.8
06	300	4.5						2.8
07	250	8.7	---	---	130	1.8	2.0	3.2
08	250	(11.2)	250	4.4	120	2.8	3.6	3.1
09	250	13.0	240	5.2	110	3.2		3.2
10	260	13.0	230	5.5	110	3.5		3.2
11	270	12.9	230	5.5	110	3.6		3.0
12	280	12.8	230	5.8	110	3.7		3.0
13	290	12.9	230	5.8	110	3.7	4.0	2.9
14	290	11.8	240	5.5	110	3.5	5.0	2.9
15	300	12.4	240	5.6	110	3.3	4.6	2.8
16	280	12.3	250	4.8	110	3.0	4.4	2.9
17	260	(12.6)	---	---	---	2.1	4.0	3.0
18	250	(10.8)					3.5	(3.1)
19	250	(9.5)					3.5	(3.1)
20	250	7.9					2.6	2.9
21	250	8.0					2.0	2.95
22	250	7.0						3.0
23	260	6.2						2.95

Time: 157.5°W.

Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 55

Oelhi, India (28.6°N, 77.1°E) January 1956								
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	3.2						2.95
01	320	3.2						3.00
02	(340)	(3.1)						(2.90)
03								
04	300	3.1						3.10
05	300	>2.8						3.10
06	280	3.3						3.25
07	240	6.2						3.60
08	240	8.5						3.60
09	240	9.2						3.60
10	280	10.4						3.25
11	280	11.4						3.25
12	280	11.6						3.25
13	280	12.2						3.25
14	280	12.0						3.25
15	280	10.8						3.25
16	260	10.5						3.40
17	240	9.2						3.60
18	270	7.1						3.30
19	280	7.2						3.25
20	240	6.0						3.60
21	280	4.5						3.25
22	320	3.5						2.90
23	340	3.2						2.90

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.

Table 56

Ahmedabad, India (23.0°N, 72.6°E) January 1956								
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.4						2.80
01	270	4.5						2.90
02	265	4.4						3.00
03	250	3.8						3.30
04	240	3.2						3.20
05	290	2.4						2.90
06	300	2.4						2.95
07	260	5.7						3.25
08	250	9.2	240	4.0	110	1.4	3.2	3.40
09	250	10.2	225	4.4	107	2.9	3.8	3.40
10	250	10.7	215	4.7	105	3.2	4.0	3.35
11	265	11.0	205	4.8	105	3.4	4.0	3.15
12	290	12.2	220	5.0	105	3.5	3.8	2.95
13	280	13.6	225	5.0	105	3.5	4.0	3.00
14	270	14.4	225	4.8	105	3.4	4.0	3.05
15	265	14.3	225	4.7	107	3.2	4.1	3.00
16	250	14.1	230	4.2	110	2.8	3.8	3.05
17	240	14.5			115	2.2	3.2	3.10
18	210	12.4					2.9	3.25
19	215	11.1					2.8	3.00
20	230	11.4					2.4	<3.10
21	215	10.4						3.30
22	225	7.0						3.10
23	250	5.1						2.80

Time: 75.0°E.

Sweep: 0.6 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 57

Calcutta, India (22.9°N, 88.5°E) January 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	255	4.8						3.0
01	<250	4.8						3.3
02	250	4.2						3.1
03	235	4.0						3.3
04	250	3.0						3.0
05	<255	3.0						3.0
06	<295	2.6						2.95
07	250	6.0						3.25
08	250	9.5	240	4.3	(125)	1.9	2.1	3.4
09	260	10.2	235	4.5	110	2.6		3.6
10	255	10.5	220	4.5	110	3.0		3.5
11	280	10.6	200	4.6	105	3.5		3.3
12	300	11.0	195	(5.0)	100	3.5		<3.3
13	300	11.0	210	4.9	100	3.5		<3.3
14	280	11.0	220	4.7	100	3.4		3.3
15	270	10.7	215	4.5	100	3.1		3.4
16	250	10.5	230	4.3	100	2.8		3.5
17	240	10.5			100	2.1	2.5	3.6
18	210	10.1					3.2	3.65
19	220	10.0					3.0	3.4
20	225	9.6					2.2	3.5
21	210	9.5					2.1	3.5
22	220	5.5						3.5
23	250	4.9						3.1

Time: 90.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 58

Bombay, India (19.0°N, 73.0°E) January 1956								
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	270	4.6						3.35
07	300	5.4						3.10
08:30	300	6.8						3.10
09	330	7.8						2.95
10	360	9.3						2.80
11	360	10.6						2.80
12	390	11.7						2.65
13	420	12.3						2.55
14	450	12.6						2.45
15	450	12.7						2.55
16	420	11.8						2.60
17	390	10.6						2.65
18	360	9.6						2.80
19	330	8.5						2.95
20	(330)	(7.4)						(2.95)
21	300	6.0						3.10
22	270	5.0						3.35
23								

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.

Table 59

Madras, India (13.0°N, 80.2°E) January 1956								
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	300	5.9						3.10
07	320	8.4						3.00
08	370	10.3						2.75
09	400	10.8						2.60
10	440	10.8						2.50
11	440	10.3						2.50
12	440	10.3						2.50
13	460	10.4						2.40
14	440	10.4						2.50
15	440	10.5						2.50
16	440	10.7						2.50
17	410	10.5						2.55
18	400	10.3						2.60
19	400	10.0						2.60
20	360	10.0						2.80
21	320	9.5						3.00
22	---	>9.0						----
23								

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.

Table 60

Tiruchy, India (10.8°N, 78.8°E) January 1956								
Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	320	5.3						3.00
07	360	7.9						2.80
08	360	9.1						2.80
09	420	9.6						2.55
10	440	9.8						2.50
11	480	9.9						2.30
12	480	10.1						2.30
13	480	10.1						2.30
14	480	10.0						2.30
15	480	10.0						2.30
16	480	9.8						2.30
17	480	9.8						2.30
18	480	9.5						2.30
19	480	9.5						2.30
20	480	9.5						2.30
21	(400)	(8.6)						(2.60)
21:30	---	---						----
23								

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.



Table 61

Kodaikanal, India (10.2°N, 77.5°E)

January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	235	7.2						3.15
01	240	6.7						3.2
02	240	5.7						3.15
03	250	4.8						3.1
04	260	3.9						3.2
05	250	3.4						3.2
06	270	4.0						2.9
07	250	7.5	---	---	115	2.4		3.1
08	280	9.4	230	---	110	3.0	8.0	2.9
09	300	10.4	220	---	105	---	10.4	2.6
10	310	10.0	210	---	105	---	11.4	2.5
11	320	9.9	205	---	105	---	12.0	2.4
12	320	9.8	200	---	105	---	12.0	2.35
13	(335)	9.8	200	---	105	---	12.0	2.3
14	360	9.8	200	---	105	---	12.0	2.3
15	---	9.8	220	---	105	---	10.4	2.3
16	255	9.9	230	---	110	---	9.0	2.4
17	260	9.9	---	---	115	2.4	7.0	2.5
18	295	9.6						2.5
19	320	9.4						2.5
20	300	9.5						2.5
21	280	9.0						2.7
22	250	8.4						3.0
23	240	8.4						3.1

Time: 75.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 62

Townsville, Australia (19.3°S, 146.7°E)

January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	(8.7)						3.8 (2.8)
01	270	>8.4						3.9 (2.8)
02	260	>7.9						3.1 (3.0)
03	270	>7.4						2.6 (2.9)
04	270	6.9						2.1 2.85
05	260	6.0						2.1 2.9
06	250	6.3				2.0		3.0 3.2
07	250	6.7	230	4.0		2.6		4.0 3.2
08	330	>7.0	230	4.7		3.1		5.6 3.0
09	345	7.8	210	4.9		3.5		6.8 2.8
10	340	8.8	200	5.2		3.7		6.2 2.8
11	340	9.4	200	5.2		3.8		6.0 2.7
12	350	10.4	---	5.2		3.9		6.0 2.7
13	350	10.8	210	5.3		3.9		5.5 2.7
14	340	11.3	210	5.2		3.8		6.0 2.8
15	325	11.5	215	4.9		3.6		5.3 2.8
16	300	11.4	230	4.7		(3.3)		4.9 2.95
17	280	8.8	235	4.4		3.0		4.1 3.0
18	250	>7.9	240	---		2.2		4.3 (3.0)
19	270	>7.0				E		3.7 (2.8)
20	300	>8.4						3.7 ---
21	310	>8.4						3.3 ---
22	300	>8.4						3.1 (2.7)
23	290	>8.4						3.1 ---

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 63

Rarotonga I. (21.3°S, 159.8°W)

January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	(8.6)						3.2 (2.9)
01	280	(9.0)						3.4 (2.7)
02	290	(8.5)						3.1 (2.9)
03	290	(7.9)						3.0 (2.8)
04	290	(7.0)						2.4 (2.9)
05	260	(6.9)						2.0 (2.9)
06	260	(7.0)						3.4 (3.0)
07	250	7.3	---	---	---	2.8		3.8 3.3
08	280	8.0	230	4.8	105	3.0	4.4	3.0 3.0
09	330	9.5	250	5.2	105	3.4	4.6	2.8 2.7
10	340	10.5	240	5.5	100	3.6	5.7	2.7 2.8
11	360	11.8	220	5.5	---	---	5.4	2.8 2.8
12	350	12.8	250	5.4	105	3.8	5.9	2.7 2.7
13	340	13.5	230	5.5	110	---	4.6	2.8 3.0
14	330	14.2	240	5.4	110	3.8	4.6	3.0 3.0
15	300	13.7	220	5.2	105	3.6	4.5	3.0 3.0
16	290	11.6	240	5.0	100	3.4	5.1	3.0 3.0
17	280	10.3	230	4.9	105	3.0	3.9	2.95 2.95
18	260	9.8	250	4.0	110	2.3	3.6	2.8 2.8
19	290	9.5						3.5 (2.8)
20	320	(8.5)						(2.8)
21	330	(9.2)						3.2 (2.7)
22	300	(9.5)						3.1 (2.8)
23	280	(9.4)						2.0 (2.9)

Time: 157.5°W.

Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 64

Brisbane, Australia (27.5°S, 153.0°E)

January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	7.7						3.9 2.8
01	260	7.5						3.6 2.8
02	270	6.5						3.6 2.8
03	280	6.5						3.0 2.8
04	270	5.9						2.6 2.8
05	270	5.4						1.6 2.8
06	260	6.0	250	3.7		2.0		3.5 2.9
07	300	6.6	220	4.3		3.0		4.8 2.85
08	315	7.4	210	4.8		3.3		5.6 2.9
09	325	7.8	210	5.0		3.6		6.2 2.8
10	350	8.2	210	5.0		3.8		6.4 2.75
11	335	8.6	210	5.2		3.9		5.8 2.7
12	340	9.0	220	5.2		(3.9)		5.9 2.7
13	330	9.0	205	5.2		3.9		5.9 2.7
14	340	9.0	205	5.1		3.8		5.1 2.7
15	320	9.1	220	5.0		3.5		5.1 2.8
16	300	9.0	230	4.7		3.2		5.0 2.8
17	285	8.5	230	4.3		2.8		4.5 2.9
18	250	8.0	---	---		E		4.3 2.8
19	260	7.5						4.0 2.7
20	300	7.6						3.5 2.6
21	300	7.5						4.0 2.6
22	300	8.0						4.0 2.6
23	280	8.2						4.0 2.8

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 65

Canberra, Australia (35.3°S, 149.0°E)

January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	6.8						3.6 2.8
01	250	(6.6)						3.6 (2.8)
02	---	5.6						3.6 2.8
03	---	5.0						3.1 2.7
04	---	4.6						2.5 2.8
05	270	4.5	---	---		(1.6)		3.0 2.8
06	260	5.0	250	(3.6)		2.3		2.8 2.9
07	340	5.9	240	4.2		2.9		3.6 3.0
08	365	6.0	230	4.6		3.2		5.7 2.9
09	340	7.0	210	4.7		3.5		5.6 2.9
10	360	6.9	215	5.0		3.6		5.6 2.9
11	370	7.4	220	5.0		(3.6)		5.6 2.9
12	360	7.5	220	5.1		3.6		5.8 2.8
13	360	7.6	215	5.0		(3.6)		4.7 2.8
14	360	7.5	220	5.0		(3.6)		4.1 2.8
15	340	7.6	220	4.9		3.6		4.5 2.9
16	330	7.4	220	4.8		3.3		4.0 2.9
17	310	7.6	220	(4.5)		3.0		4.3 2.9
18	280	7.4	240	(3.6)		2.5		4.0 3.0
19	255	7.1						3.7 3.0
20	---	7.1						3.6 2.7
21	---	7.0						3.6 2.7
22	---	7.2						3.6 2.7
23	---	(6.9)						3.3 (2.7)

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 66

Hobart, Tasmania (42.9°S, 147.3°E)

January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.0						2.8
01	280	5.3						2.9
02	280	4.5						2.8
03	280	3.6						2.8
04	270	4.0						3.0
05	250	4.5	---	---		1.4		2.2 3.1
06	240	5.0	---	---		2.8		3.1 3.0
07	240	5.5	220	4.4		3.1		3.0 3.0
08	300	6.0	200	4.6		3.4		3.0 3.0
09	380	6.0	200	4.8		3.5		4.1 2.9
10	350	6.6	210	5.0		3.6		4.2 2.9
11	360	7.0	210	5.0		3.8		4.0 2.9
12	350	6.8	200	5.0		3.8		4.0 3.0
13	360	6.8	200	5.0		3.8		2.9 2.9
14	350	7.0	220	4.9		3.7		2.9 2.9
15	340	7.0	220	4.8		3.5		3.0 3.0
16	280	6.9	200	4.7		3.2		3.0 3.0
17	240	7.0	---	---		3.0		3.0 3.0
18	250	7.0				2.4		2.8 3.1
19	250	7.0				1.9		3.6 3.0
20	250	7.0				---		3.6 2.9
21	280	7.0						3.4 2.8
22	280	6.6						2.9 2.9
23	280	6.5						2.8 2.8

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 67

Poitiers, France (46.6°N, 0.3°E)							
November 1955							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	<295	3.6					2.0 2.85
01	295	3.6					1.8 (2.85)
02	<280	3.6					(2.80)
03	<285	3.6					2.80
04	255	3.2					2.95
05	250	3.1					3.00
06	<245	3.0					3.00
07	230	4.9	180	1.8	---	---	(3.25)
08	220	6.8	215	2.4	<115	2.0	---
09	230	7.6	220	3.5	110	2.5	2.8
10	230	(8.6)	215	3.7	110	2.8	3.2
11	235	8.8	210	3.8	<110	2.9	3.2
12	235	(9.1)	220	4.0	105	3.0	---
13	235	(8.5)	225	3.9	105	3.0	
14	245	9.0	235	3.5	110	2.7	
15	230	(9.1)	230	2.5	115	2.3	2.3
16	220	(7.2)	---	1.8	---	E	2.3
17	210	6.2			---	E	2.3 (3.30)
18	<225	5.0					2.0 3.30
19	<235	4.2					3.20
20	240	3.7					3.15
21	255	3.6					3.05
22	275	3.5					2.85
23	<280	3.6					(2.90)

Time: 0.0°.

Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

Table 68

Casablanca, Morocco (33.6°N, 7.6°W)							
November 1955							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	4.00					3.00
01	---	3.90					3.00
02	---	3.90					2.95
03	---	4.00					3.00
04	---	4.25					3.20
05	---	3.50					3.35
06	---	3.15					3.00
07	240	4.90			---	E	3.40
08	225	7.90	230	2.65	120	2.10	2.5 3.55
09	235	8.90	230	(4.00)	110	2.70	3.4 3.50
10	240	9.20	215	4.35	110	2.95	3.5 3.60
11	245	9.30	220	(4.50)	105	3.10	3.5 3.45
12	245	8.80	205	4.55	105	3.30	3.5 3.40
13	250	9.10	220	(4.60)	110	3.25	3.5 3.30
14	260	9.50	225	---	105	3.10	3.5 3.30
15	250	9.90	230	(4.45)	110	2.95	3.5 3.35
16	240	9.50	235	(3.50)	110	2.50	3.5 3.40
17	225	9.00			---	E	3.0 3.50
18	205	6.60					2.7 3.35
19	---	4.80					2.3 3.20
20	---	4.60					3.20
21	---	>4.55					3.15
22	---	4.30					3.10
23	---	4.20					3.05

Time: 0.0°.

Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 69\*

Campbell I. (52.5°S, 169.2°E)							
July 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05	---	E					(2.9)
06	---	E					
07	---	E					
08	240	3.1	---	---	---	1.6	3.3
09	240	3.8	230	2.9	120	2.2	3.4
10	250	4.1	230	3.2	115	2.4	3.3
11	260	4.4	230	3.4	120	2.5	3.3
12	270	4.6	230	3.5	110	2.6	3.3
13	260	4.5	230	3.4	120	2.5	3.4
14	250	4.4	230	3.2	120	2.3	3.3
15	250	4.2	230	2.7	120	1.9	3.3
16	230	3.9			---	1.4	3.1
17	250	3.0					3.0
18	---	2.4					2.9
19	---	1.9					2.75
20	---	E					(2.9)
21	---	E					
22	---	E					
23	---	E					

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

\*Observations taken on a 19-hour working schedule.

Table 71\*

Campbell I. (52.5°S, 169.2°E)							
July 1953							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05	---	E					(2.6)
06	---	E					(2.5)
07	---	1.8					1.8 2.8
08	250	3.0	---	---	110	1.5	2.0 3.3
09	240	3.5	230	3.1	110	1.9	3.3
10	250	3.7	230	3.2	110	2.2	3.2
11	260	4.0	230	3.3	110	2.3	3.2
12	270	4.2	240	3.3	110	2.4	3.2
13	270	4.3	240	3.2	110	2.3	3.3
14	260	4.3	240	3.1	110	2.2	3.3
15	250	4.2	240	2.6	120	1.8	3.3
16	240	3.7			130	1.4	3.8 3.2
17	250	3.0					3.0
18	---	2.2					3.0
19	---	1.8					2.8
20	---	1.8					2.7
21	---	1.8					2.6
22							
23	---	(1.6)					2.8

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

\*Observations taken on an 18-hour working schedule.

Table 70\*

Campbell I. (52.5°S, 169.2°E)							
June 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05	---	E					1.9
06	---	E					2.6
07	---	E					2.4
08	230	3.2			---	1.7	3.65
09	240	4.0	220	2.8	120	2.1	3.8
10	250	4.4	230	3.2	115	2.4	3.8
11	250	4.6	220	3.4	110	2.5	3.75
12	250	4.6	220	3.5	110	2.5	3.75
13	240	4.7	220	3.3	120	2.4	3.75
14	250	4.6	230	3.0	120	2.3	3.65
15	230	4.6	230	2.5	---	1.8	1.9 3.65
16	220	4.1			---	---	3.5
17	250	3.3					3.3
18	---	2.5					3.2
19	---	1.9					3.2
20	---	E					
21	---	E					
22	---	E					
23	---	E					

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

\*Observations taken on a 19-hour working schedule.

Table 72\*

Campbell I. (52.5°S, 169.2°E)							
June 1953							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00							
01							
02							
03							
04							
05	---	1.1					2.0 2.7
06	---	1.3					2.0 2.6
07	---	1.7					2.0 2.8
08	240	3.1			110	1.4	2.0 3.3
09	240	3.8			110	1.9	3.4
10	240	4.2	220	3.0	110	2.1	3.4
11	250	4.4	230	3.1	110	2.3	3.35
12	250	4.6	230	3.2	110	2.3	3.4
13	250	4.6	230	3.2	110	2.3	3.4
14	250	4.6	240	3.0	120	2.1	3.3
15	240	4.7	---	---	120	1.7	3.4
16	230	4.2			120	1.3	3.2
17	240	3.4					3.1
18	270	2.6					1.7 2.9
19	---	2.1					2.8
20	---	1.9					2.8
21	---	1.7					2.8
22							
23	---	1.4					2.4

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

\*Observations taken on an 18-hour working schedule.

TABLE 73  
IONOSPHERIC DATA

foF2, 0.1 Mc, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	F	F		F	F	F	F	F																	
	55	52	44	44	43	44	45	44	86	133	138	145	135	129	134	133	131	127	111	95	87	75	70	69	
02	F	F																							
	66	58	50	45	45	46	41	50	92	120	127	141	135	132	131	123	121	122	120	108	100	90	74	56	U F
03	U A	A	A	A	A																				
	45	38				36	36	48	86	123	129	131	130	130	127	127	119	112	107	96	84	72	67	60	
04	F	F	F	F	F	F	F	F																	
	63	58	57	52	47	48	48	56	100	125	132	136	140	139	136	130	128	121	108	99	90	78	68	66	
05	F	F	F	F	F	F	F	F																	
	59	59	55	50	52	47	45	53	93	119	128	137	139	135	126	127	124	115	100	93	88	75	69	60	
06	F	F	F	F	F	F	F	F																	
	53	50	52	52	55	45	41	50	98	111	130	126	137	125	123	121	123	114	106	91	84	67	61	60	
07	F	F	F	F	F	F	F	F																	
	56	57	53	57	55	50	50	52	87	115	130							123	107	96	82	72	68	60	
08	F	F	F	F	F	F	F	F																	
	69	66	64	67	59	49	45	52	85	113	130	133	141	132	127	135	130	127	116	96	90	86	76	62	
09	F	F	F	F	F	F	F	F																	
	56	51	50	52	54	53	43	49	83	103	115	127	136	133	132	127	128	118	103	94	88	82	76	70	
10	U F	F	F	F	F	F	F	F																	
	64	64	59	60	60	59	56	57	84	108	113	112	136	142	142	142	137	132	120	107	87	83	78	74	
11	U F	U F	U F	C	C	C	U F	U F																	
	59	50	54				25	37	76	103	115	130	133	139	133	126	130	116	105	102	79	68	58	54	
12	F	F	F	F	F	F	F	F																	
	50	55	55	58	52	46	45	49	85	103	114	126	128	126	127	126	120	108	100	86	75	66	55	52	
13	F	F	F	F	F	F	F	F																	
	51	47	48	46	44	41	38	47	82	99	119	129	132	127	123	120	125	117	105	99	92	67	58	53	
14	F	F	F	F	F	F	F	F																	
	49	44	44	44	47	43	46	50	84	105	116	125	129	120	125	125	119	117	103	93	80	63	55	53	
15	F	F	F	F	F	F	F	F																	
	51	49	52	49	47	44	40	49	84	107	115	127	138	135	131	132	127	122	106	89	76	74	57	52	
16	F	F	F	F	F	F	F	F																	
	51	49	51	55	54	51	50	56	92	104	117	127	128	129	124	121	114	101	101	92	77	58	53	47	
17	F	F	F	F	F	F	F	F																	
	42	45	47	50	49	48	49	56	91	106	114	127	125	125	125	120	117	110	101	88	72	58	51	47	
18	F	F	F	F	F	F	F	F																	
	46	44	45	45	42	38	37	47	81	104	116	121	126	118	118	114	110	100	88	76	66	58	47	45	
19	F	F	F	F	F	F	F	F																	
	42	38	39	40	41	38	37	46	84	90	108	114	114	114	112	128			105	86	75	66	65	66	
20	F	F	F	F	F	F	F	F																	
	60	53	46	44	42	38	37	46	86	114	115	122	123	116	118	115	112	106	94	84	71	62	54	53	
21	U F	U F	F	F	F	F	F	F																	
	52	56	58	63	48	45	44	54	90	103	109	108	103	117	122	127	126	114							
22	F	F	F	F	F	F	F	F																	
	30	34	36	32	31	28	29	46	86	103	113	124	125	115	110	105	106	93	88	82	68	60	59	58	
23	F	F	F	F	F	F	F	F																	
	57	57	62	59	49	38	33	45	78	103	112	120	122	128	122	125	125	125	110	100	80	67	65	60	
24	F	F	F	F	F	F	F	F																	
	60	66	72	70	66	59	54	58	92	107	112	134	128	128	124	116	119	112	98	82	74	72	80	76	
25	J S	U S	U F																						
	78	72	68	62	66	70	63	57	85	107	123	132	132	131	125	123	115	115	102	89	81	59	52	54	
26	F	F	F	F	F	F	F	F																	
	58	61	66	60	61	50	50	61	94	110	120	126	123	125	120	124	120	111	109	96	85	72	68	66	
27	F	F	F	F	F	F	F	F																	
	59	56	60	58	55	48	39	50	86	106	125	136	131	121	119	120	118	112	106	96	80	74	61	58	
28	F	F	F	F	F	F	F	F																	
	56	56	56	56	54	47	43	54	90	112	128	128	124	120	119	122	122	118	110	95	86	66	65	56	
29	F	F	F	F	F	F	F	F																	
	55	57	56	58	58	53	43	48	81	103	113	111	117	118	123	122	125	120	110	98	90	80	80	70	
30	U F	U F	F	F	F	F	F	F																	
	54	42	53	60	48	44	38	54	92	110	128	136	137	135	133	132	132	126	112	98	87	71	60	67	
31	F	F	F	F	F	F	F	F																	
	64	57	55	58	55	51	51	62	96	121	133	140	133	134	132	132	128	125	118	102	92	81	68	57	
MED	56	55	54	55	52	46	43	50	86	107	117	127	130	128	125	125	123	116	106	94	82	71	65	58	
NO	31	31	30	29	29	30	31	31	31	31	31	30	30	30	30	30	29	30	30	31	31	31	31	31	

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.



TABLE 74  
IONOSPHERIC DATA

foF2, O.I Mc, January 1957

75° W Meon Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330	
01	F 52	48	F 44	44	F 43	F 45	F 41	F 66	115	137	140	140	133	135	135	130	131	116	103	88	80	68	69	F 68	
02	F 61	57	46	44	44	42	39	72	107	126	136	138	135	131	129	120	124	125	117	104	98	88	F 62	53	
03	F 42	I A 39	36	I A 36	35	36	37	71	111	126	122	136	129	127	130	122	115	105	104	96	80	70	C 69	69	
04	59	F 58	F 52	F 49	F 47	F 49	F 47	73	112	122	133	142	137	129	132	130	126	118	106	90	86		66	63	
05	F 62	F 58	F 53	F 51	50	44	41	75	118	125	131	135	136	131	125	126	122	113	98	94	84	F 72	F 66	58	
06	F 48	F 50	F 58	F 56	50	F 44	42	68	103	130	123	132	130	126	123	120	117	110	101	87	F 72	F 67	F 62	59	
07	57	59	58	56	52	50	44	68	110	123	95	C	C	C	C	C	C	C	95	92	78	70	70	67	
08	66	67	67	64	55	46	43	72	106	126	132	139	136	128	126	125	130	126	106	90	88	76	70	59	
09	51	52	50	53	54	U F 47	U F 42	69	88	107	125	130	139	137	132	125	124	116	102	90	82	78	72	F 66	
10	U F 66	60	61	58	62	58	55	69	U S 96	109	124	128	140	144	142		132	125	114	96	F 88	76	78	F 59	
11	54	48	C	C	C	U F 25	U F 26	F 63	94	115	123	131	132	136	129	128	125	115	103	89	74	58	F 58	52	
12	52	55	56	55	48	44	45	67	101	113	116	125	125	127	130	126	117	107	98	82	72	59	56	51	
13	49	48	45	43	42	42	38	65	94	117	115	132	130	130	120	125	123	112	95	86	78	66	56	51	
14	47	42	44	44	F 42	44	43	67	102	106	120	120	124	125	122	124	118	111	98	84	70	58	F 55	F 54	
15	47	51	52	49	F 46	U F 42	U F 42	67	99	113	118	138	132	135	129	128	126	115	101	80	70	U F 61	F 55	F 48	
16	49	51	53	55	51	F 50	F 51	F 71	106	108	114	135	131	126	122	118	111	109	98	84	66	53	F 48	44	
17	F 45	F 47	F 48	F 47	48	48	52	73	97	113	122	126	127	125	U H 124	118	113	U S 108	U S 92	U S 78	U S 62	U S 54	U S 47	U S 47	
18	45	F 44	F 44	F 44	41	36	38	68	92	112	118	125	126	119	I C 114	I C 112	I C 106	92	80	70	60	52	48	43	
19	39	38	41	42	41	37	36	62	92	100	116	110	114	110	U 120	124	120	115	98	78	72	66	62	62	
20	57	50	45	43	40	37	37	70	103	115	120	123	119	U 114	116	116	108	102	88	78	66	55	53	53	
21	52	57	61	60	45	45	45	71	93	103	108	105	109	120	119	125	120	B F	B F	U F 32	U F 29	U F 22	U F 29	F 30	
22	F 28	U F 29	F 31	U F 31	U F 29	F 28	35	68	U F 69	121	108	121	120	113	105	107	103	F 92	84	70	U F 49	F 58	F 57	F 58	
23	56	U F 59	U F 58	F 54	F 42	U F 24	U F 36	62	98	112	116	120	124	127	125	127	124	118	104	97	74	67	64	60	
24	F 58	69	74	68	62	56	55	74	103	117	125	130	129	125	124	118	117	105	94	84	77	76	76	78	
25	75	74	68	62	66	68	55	76	103	115	128	134	127	122	122	120	112	115	95	87	72	59	56	56	
26	58	64	63	60	F 57	F 49	50	77	103	114	124	126	126	120	123	122	120	106	102	90	77	69	F 65	62	
27	58	F 57	60	57	F 51	45	39	70	100	124	135	131	123	116	120	119	114	115	105	87	77	71	63	56	
28	57	56	56	55	49	45	43	76	100	122	125	127	121	120	120	122	120	115	104	90	74	67	58	56	
29	55	57	58	59	54	47	37	F 66	93	116	108	116	116	122	I C 124	125	123	116	105	96	80	80	F 74	F 65	
30	U F 38	F 47	F 59	U F 59	U F 45	U F 45	F 42	73	107	123	130	137	137	134	130	132	127	123	102	94	83	68	F 62	F 65	
31	F 59	F 55	55	57	54	53	52	80	111	127	140	142	137	131	136	130	126	120	107	96	88	72	60	56	
MED	54	55	54	54	48	45	42	70	102	116	123	130	129	126	124	124	120	115	102	87	77	67	62	58	
NO	31	31	30	30	30	31	31	31	31	31	31	30	30	30	30	29	30	29	30	31	31	30	31	31	

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.



TABLE 75  
IONOSPHERIC DATA

foF<sub>1</sub>, O<sub>1</sub> Mc, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01											L	L	L	L	L	L								
02											L	L	L	L	L	L								
03										L	L	L	L	L	L	L								
04											L	L	L	L	L	L								
05										L	L	L	L	L	L	L								
06									L	L	L	C	C	C	C	C								
07									L	L	L	L	L	L	L	L								
08									L	L	L	L	L	L	L	L								
09											L	L	L	L	L	L								
10											L	L	L	L	L	L								
11									L	L	L	L	L	L	L	L								
12										L	L	L	L	L	L	L								
13									L	L		L	L	L	L	L								
14										L	L	L	L	L	L	L								
15											L	L	L	L	L	L								
16											L	L	L	L	L	L								
17											L	L	L	L	L	L								
18											L	L	L	L	L	L								
19									L	L		L	L	L	B	L	C							
20											L	L	L	L	L	L								
21												L	L	L	L	L								
22											L	L	L	L	L	L								
23											L	L	L	L	L	L								
24											L	L	L	L	L	L								
25											L	L	L	L	L	L								
26												L	L	L	L	L								
27												L	L	L	L	L								
28												L	L	L	L	L								
29											L	L	L	L	L	L								
30											L	L	L	L	L	L								
31												L	L	L	L	L								
MED																								
NO																								

TABLE 76  
IONOSPHERIC DATA

foE, 0.05 Mc, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01									A	290	330	350	370	370	350	270	A							
02									230	300	330	330	345	360	340	310	230							
03									230	290	335	350	360	355	325	250	A							
04									B	U A	280	310	315	320	340	320	300	260						
05									A	U A	U A	U A	U A	U A	U A	330	290	280						
06									U A	230	310	330	350	360	360	340	320	A						
07									210	310	350		C	C	C	C	C	C						
08									185	300	315	350	350	340	330	300	225							
09									200	250	320	340	345	350	320	290	240							
10									B	250	290	330	335	335	300	300	250							
11									190	260	305	335	330	350	340	300	240							
12									175	260	310	325	360	350	330	300	245							
13									A	255	300	325	345	340	330	290	A							
14									185	250	310	330	340	345	325	285	240							
15									200	270	300	320	330	330	315	285	245							
16									190	280	310	310	320	330	295	275	245							
17									U H	210	280	330	340	340	320	290	A							
18									220	280	320	340	350	350	330	310	260							
19									240	280	330	360	360	360		315	C							
20									215	315	375	370	370	360	365	380	220							
21									B	275	325	350	340	345	340	290	230							
22									B	315	340	350	355	340	340	300	235							
23									225	270	320	330	340	355	330	300	230							
24									225	290	330	335	360	360	325	300	A							
25									B	290	330	340	350	350	350	310	235							
26									B	290	330	340	350	350	350	310	235							
27									B	290	340	330	345	355										
28									B	295	340	360	360	360	350	325	270							
29									H	220	290	330	355	370	370	355	330	260						
30									225	260	300	350	350	345	325	310	280	190						
31									240	290	325	340	345	340	335	320	275							
MED									220	280	325	340	345	350	330	300	245							
NO									20	29	30	29	29	29	27	28	21	1						

TABLE 77  
IONOSPHERIC DATA

foEs, O.1 Mc, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
01	S	S	S	S	S	S	28	S	29	42	J	48	45	46	45	37	J	43	59	75	50	50	38	S	S	S	
02	S	S	S	S	S	S	S	S	G	G	35	35	51	42	37	G	G	B	S	S	S	S	S	S	B		
03	B	84	66	70	90	B	S	34	47	61	62	71	73	46	45	30	44	21	37	43	39	B	S	S			
04	B	S	S	21	S	S	B	S	22	31	34	B	G	G	G	G	G	20	27	J	18	J	22	S	J	30	27
05	S	S	S	S	J	60	35	S	21	32	36	40	39	43	G	G	G	B	S	S	S	S	32	32	J	18	
06	S	S	S	S	S	S	S	S	30	38	39	G	G	43	35	32	30	18	S	S	S	29	B	B	S		
07	B	B	S	S	S	S	S	74	28	G	G	C	C	C	C	C	C	S	S	26	19	S	42	S			
08	S	S	40	48	31	18	S	18	G	G	G	39	G	48	G	G	29	63	B	S	S	S	B	S			
09	S	S	S	S	S	S	S	S	22	30	G	41	34	G	G	G	G	B	S	S	S	S	S	S	S		
10	S	S	20	J	27	S	S	S	G	G	G	G	G	37	35	G	G	B	S	S	S	S	S	S	S		
11	S	S	S	C	C	C	S	S	G	G	G	G	35	G	G	G	G	B	40	S	24	S	S	S			
12	S	S	S	S	S	S	S	33	G	G	G	G	G	36	36	34	27	B	S	62	37	S	S	S			
13	26	E	23	25	44	38	29	36	36	25	43	53	38	37	36	38	40	E	S	S	S	S	S	S			
14	S	S	37	33	S	S	S	38	G	26	30	36	38	43	G	31	29	34	31	28	35	22	S	S			
15	S	S	S	S	S	23	31	S	G	G	42					30		G	B	S	S	S	S	S			
16	S	S	S	S	43	S	S	S	B	G	32	40	39	37	35	31		G	B	S	31	S	S	S			
17	S	S	S	S	S	S	S	S	G	G	68	G	G	34	G	30	52	44	S	S	S	S	37	S			
18	S	S	S	S	S	E	S	S	G	G	G	G	G	G	G	G	G	G	S	S	B	S	B	S			
19	B	B	B	B	S	B	B	S	G	29	G	B	37	B	B	G	C	C	37	S	S	S	38	S			
20	S	S	E	B	E	B	B	B	G	G	G	G	39	40	G	G	23	B	B	B	S	B	B	B			
21	S	S	B	B	E	B	S	B	B	G	G	G	G	G	36	G	G	B	B	B	B	42	B	B			
22	B	B	B	B	B	B	B	B	27	29	34	G	G	G	G	G	G	B	B	S	S	S	S	S			
23	S	S	E	S	13	14	S	17	35	G	G	G	G	G	G	G	G	17	S	S	S	S	S	S			
24	S	S	S	E	S	S	S	S	G	G	G	41	G	38	35	G	29	195	G	B	S	S	S	29			
25	S	S	E	S	S	33	37	S	25	31	G	G	G	G	G	G	G	B	B	S	S	S	S	S			
26	B	S	S	S	S	S	36	36	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	S			
27	S	S	S	S	S	S	S	S	B	G	G	G	B	G	B	B	B	B	B	B	S	B	B	B			
28	B	S	B	S	S	B	B	S	B	G	G	G	G	G	G	G	G	B	B	S	S	S	B	S			
29	30	26	S	S	S	E	S	S	G	G	33	35	G	G	G	G	G	B	B	S	S	S	S	S			
30	S	S	S	E	S	S	S	S	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S			
31	S	S	S	S	S	S	S	S	G	G	35	36	36	G	G	G	36	34	41	33	S	42	S	S			
MED					U	31		18												26	24						
NO	9	6	12	12	9	16	10	11	31	31	31	30	30	30	30	30	29	29	16	13	11	9	12	8			

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 78  
IONOSPHERIC DATA

f min, 0.1 Mc, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	E S	E S	E S	E S	E S	E S	E S	E S	E S								E S	E S	E S	E S	E S	E S	E S	E S	
02	E S	E S	E S	E S	E S	E S	E S	E S	E S								E S	E S	E S	E S	E S	E S	E S	E S	
03	24	23	13	E	16	20	16	16	23	24	26	30	30	34	29	23	22	16	17	16	16	17	16	15	
04	17	E S	E S	E S	E S	E S	E S	E S	20	24	25	40	29	38	27	28	19	E S	E S	E S	E S	E S	E S	E S	
05	E S	E S	E S	E S	E S	E S	E S	E S	17	17	23	23	24	30	25	23	24	E S	E S	E S	E S	E S	E S	E S	
06	E S	E S	E S	E S	E S	E S	E S	E S	E S	23	23	23	27	25	24	21	20	E S	E S	E S	E S	E S	E S	E S	
07	20	17	13	12	16	16	16	16	17	26	23							E S	E S	E S	E S	E S	E S	E S	
08	E S	E S	E S	E S	E S	E S	E S	E S	18	26	24	28	27	28	25	23	20	17	17	16	16	16	17	16	
09	E S	E S	E S	E S	E S	E S	E S	E S	16	21	23	27	30	26	25	23	23	E S	E S	E S	E S	E S	E S	E S	
10	E S	E S	E S	E	E S	E S	E S	E S	17	18	19	23	20	21	22	22	20	E S	E S	E S	E S	E S	E S	E S	
11	E S	E S	E S		C	C	C	E S	E S	18	20	20	26	26	24	23	E S		E S	E S	E S	E S	E S	E S	
12	E S	E S	E S	E S	E S	E S	E S	E S	E S	19	20	21	30	24	24	23	19	E S	E S	E S	E S	E S	E S	E S	
13	E S	E	13	13	13	13	16	16	E S	E S	17	16	23	20	22	19	17	E S	E S	E S	E S	E S	E S	E S	
14	E S	E S	E S	E S	E S	E S	E S	E S	E S	17	20	21	20	21	16	16	E S	E S	E S	E S	E S	E S	E S	E S	
15	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	20	20	23	22	23	18	21	E S	E S	E S	E S	E S	E S	E S	
16	E S	E S	E S	E S	E S	E S	E S	E S	20	21	20	20	26	23	21	22	E S	E S	E S	E S	E S	E S	E S	E S	
17	E S	E S	E S	E S	E S	E S	E S	E S	21	21	22	19	24	26	25	24	21	E S	E S	E S	E S	E S	E S	E S	
18	E S	E S	E S	13	13	E	16	16	18	22	28	24	24	27	25	23	23	E S	E S	E S	E S	E S	E S	E S	
19	22	19	23	22	E S	20	20	16	20	25	28	39	35	39	49	23		C	C	22	E S	E S	E S	E S	
20	E S	E S	E		E	18	19	20	19	23	31	33	32	36	30	28	21	28	22	24	E S	19	22	24	
21	E S	E S			E	17	16	20	25	22	24	27	28	31	28	23	29	44	23	23	23	27	22	18	
22	19	22	20	20	19	23	19	21	22	28	21	22	23	23	23	20	E S	16	23	19	16	16	16	15	
23	E S	E S	E	E S	E S	E S	E S	E	E S	E S							E S	E S	E S	E S	E S	E S	E S	E S	
24	E S	E S	E S	E	E S	E S	E S	E S	20	21	20	22	28	24	23	22	17	17	E S	19	16	16	16	16	
25	E S	E S	E	E S	E S	E S	E S	E S	24	25	26	30	28	27	29	28	21	E S	E S	E S	E S	E S	E S	E S	
26	17	E S	E S	E S	E S	E S	E S	E S	25	31	35	38	42	45	37	35	31	25	24	19	21	19	17	E S	
27	E S	E S	E S	E S	E S	E S	E S	E S	26	25	29	29	39	40	37	37	26	22	17	20	16	20	21	19	
28	19	E S	17	13	15	19	18	16	25	27	28	31	27	26	27	26	20	E S	E S	E S	E S	E S	E S	E S	
29	E S	E S	E S	E S	E S	E	E S	E S	E S	19	23	24	28	26	29	25	21	E S	E S	E S	E S	E S	E S	E S	
30	E S	E S	E S	E	E S	E S	E S	E S	E S	E S	16	16	23	25	24	22	23	E S	16	11	13	12	16	15	16
31	E S	E S	E S	E S	E S	E S	E S	E S	E S	17	19	23	23	24	25	22	22	E S	E S	E S	E S	E S	E S	E S	
	16	13	13	13	16	13	16	15	17	19	23	23	24	25	22	22	17	21	16	16	16	16	16	16	
MED																									
NO																									



TABLE 79  
IONOSPHERIC DATA

h'F2, Km, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01												250	L	280	L	L	L							
02											L	250	L	250	L	L								
03											L	L	L	260	340	L	320							
04										250	240	250	L	L	L	L	L							
05											240	240	L	260	L	L	L							
06										240	250	250	260	L	L	L	260							
07									L	L	L	L	L	L	L	L	L							
08									L	L	L	L	L	L	L	L	L							
09																285								
10											L	250	240	L	L	L								
11									L	L	L	L	L	L	L	L	L							
12									U	L	L	250	260	250	L	L	L							
13									L	L		270	260	240	L	L	L							
14										235	L	245	255	260	270	240								
15									240	L		L	240	L	L	L	L							
16													L	L	L	L	L							
17											U	L	L	L	U	L								
18											250	250	230	240	240	240	250							
19									240	240	250	260	290	270	260	260	L							
20											230	240	240	240	260	L	250	260						
21											260	L	260	L	260	L	L							
22										270	250	250	L	230	L	L	L							
23											L	L	L	L	L	L	L							
24													L	L	L	L	L							
25										L	240	250	235	230	250	L	L							
26											L	L	L	L	L	L	L							
27												L	L	L	L	L	L							
28											L	L	L	L	L	L	L							
29										L	L	L	L	L	L	L	L							
30										L	L	L	L	L	L	L	L							
31											240	L	245	240	U	L	245	245						
MED										U	240	240	250	245	250	U	245	U	250					
NO									1	7	11	14	13	13	9	5	5	1						

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 80  
IONOSPHERIC DATA

h'F<sub>o</sub> Km, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	260	260	250	270	270	260	250	230	230	230	230	230	220	220	235	240	240	250	240	230	240	240	240	250	
02	240	230	240	290	310	260	270	280	230	230	230	235	230	230	230	250	260	270	250	220	240	240	240	270	
03	280	U A 410	A	A	A	300	260	280	230	250	225	250	255	230	230	245	220	245	250	250	230	230	230	250	
04	250	250	260	270	250	260	260	240	240	220	220	230	220	230	235	220	235	230	230	230	240	230	250	260	
05	230	235	260	250	250	240	250	260	235	220	220	220	220	230	220	240	250	230	220	220	235	240	240	240	
06	250	285	290	275	250	220	250	270	240	220	230	235 C	230 C	235 C	235 C	240 C	245 C	240	240	230	240	250	260	270	
07	280	300	260	280	270	250	250	240	235	230	235							230	220	240	230	250	250	270	
08	280	280	280	260	240	240	255	290	240	230	230	230	240	240	240	240	240	250	230	215	250	245	245	235	
09	260	290	280	280	275	240	245	265	240	245	235	235	235	245	230	230	240	235	230	235	235	250	260	270	
10	250	260	310	335	320	280	275	260	250	230	225	235	220	230	230	230	240	240	215	230	225	225	250	225	
11	235	270	270	C	C	C	U S 325	270	235	225	225	225	245	230	230	225	240	225	220	230	225	230	240	250	
12	280	280	270	260	240	240	270	240	225	225	215	235	220	230	225	235	225	220	220	230	235	230	235	240	
13	265	250	280	260	270	260	250	240	225	215	220	215	230	225	220	200	230	225	220	220	230	225	240	240	
14	250	260	280	275	265	265	250	240	220	235	225	215	220	215	210	230	235	235	215	230	225	230	250	260	
15	250	290	280	260	250	260	250	240	225	230	220	210	230	220	230	230	230	230	210	215	220	220	250	240	
16	270	280	300	270	255	250	260	240	230	225	230	250	225	225	230	235	225	215	220	230	220	220	250	250	
17	280	280	280	275	265	260	260	240	230	230	220	225	220	210	220	250	U A 240	U A 220	210	220	220	240	245	260	
18	260	260	275	250	235	240	270	260	225	230	230	230	210	230	230	230	240	240	205	220	230	240	260	260	
19	280	290	320	300	260	260	290	270	230	220	240	250	230	230		220	C	C	220	230	240	250	260	250	
20	240	235	235	270	250	260	260	270	220	230	220	U L 235	220	235	220	230	235	240	B 500	U F 530	U B 300	B 240	B 265	300	
21	285	300	300	260	250	300	270	275	240	235	240	235	225	230	240	245	270		500	530	300			435	
22	F 400	U F 315	F E B 350	U F 280	U F 300	E B 495			290	240	225	220	H 190	H 205	H 220	H 220	230	240	225	240	240	230	230	260	260
23	270	270	270	270	260	300	290	270	250	220	230	205	215	240	220	235	230	230	215	230	225	250	250	250	
24	280	270	265	250	230	230	245	240	235	230	230	240	230	230	230	240	245	225	250	260	215	270	280	260	
25	260	240	250	285	300	250	210	235	225	220	220	215	215	220	240	230	230	230	215	225	225	225	265	275	
26	300	290	270	255	250	250	280	260	235	230	235	235	235	240	230	250	240	220	250	230	235	235	270	270	
27	270	270	270	250	240	240	240	280	235	220	230	230	225	235	230	245	240	235	225	225	230	255	250	260	
28	290	260	275	260	240	260	265	260	225	225	225	220	220	220	230	235	240	245	225	225	240	220	260	255	
29	300	275	285	275	240	240	230	250	230	220	235	240	230	230	245	240	240	240	235	245	250	240	250	290	
30	305	320	330	280	260	350	310	270	240	220	210	240	220	225	215	240	240	230	210	235	230	210	230	260	
31	260	260	250	260	280	260	265	260	230	235	225	215	230	230	235	230	230	240	240	240	230	225	230	245	
MED	270	270	275	270	255	260	260	260	230	230	225	230	225	230	230	235	240	230	225	230	230	240	250	260	
NO	31	31	29	29	29	29	31	31	31	31	31	30	30	30	29	30	29	29	31	31	31	30	30	31	

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 81  
IONOSPHERIC DATA

NE, Km, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01									A	115	111	U B	117	119	111	111	A							
02									129	115	109	109	I A	106	103	103	103	111						
03									129	119	119	117	I B	115	113	115	115	A						
04									B	119	119	I B	119	115	119	125	125							
05									A	A	U A	111	109	109	117	111	109	B						
06									119	111	111	U A	111	111	I A	U A	A							
07									121	115	111	C	C	C	C	C	C							
08									U B	119	119	111	115	115	115	111	115	119						
09									U A	125	109	109	117	I A	118	119	117	B						
10									B	117	115	115	109	109	111	111	117	E B						
11									129	109	111	111	115	111	111	115	117							
12									119	109	109	109	121	115	115	119	119							
13									A	A	A	A	U A	111	103	111	109	A						
14									119	111	109	109	109	109	109	105	119							
15									131	109	103	109	109	113	109	119	119	H						
16									119	111	109	115	115	115	109	111	105							
17									E B	E B	119	119	111	109	111	109	111	E B						
18									129	111	119	113	111	111	109	111	127	135						
19									145	131	121		B	A	B	B	U B	C						
20									161	121	127	U R	127	121	119	119	119	131	B					
21									B	119	115	119	119	115	115	113	119	B						
22									B	B	109	109	109	109	H	111	111							
23									A	111	113	111	111	119	115	115	111							
24									U B	U B	121	115	109	109	111	111	115	115						
25									B	119	119	119	113	111	119	119	119							
26									B	B	B	B	B	B	B	B	B							
27									B	U B	U B	U B	I B	U B	B	B	B							
28									B	U B	U B	U B	U B	U B	U B	U B	H							
29									H	115	111	111	119	119	119	121	119							
30									119	109	109	117	115	115	115	115	115	129						
31									121	117	115	113	I A	111	109	107	105	105						
MED									121	115	111	115	114	114	111	115	118							
NO									19	24	29	27	28	28	27	28	20	2						

TABLE 82  
IONOSPHERIC DATA

h'Es, Km, January 1957

75° W. Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	S	S	S	S	S	S	105	S	145	129	119	119	119	111	119	105	105	103	101	101	101	S	S	S
02	S	S	S	S	S	S	S	S	G	G	127	119	105	119	119	G	G	B	S	S	S	S	S	B
03	B	119	109	109	105	B	S	129	121	125	119	115	117	115	111	115	111	107	101	101	101	B	S	S
04	B	S	S	107	S	S	B	S	133	123	129	B	G	G	G	G	G	101	101	101	101	S	109	109
05	S	S	S	S	115	101	S	S	119	111	119	115	115	115	G	G	G	B	S	S	S	101	101	105
06	S	S	S	S	S	S	S	S	121	129	115	G	G	109	103	117	103	103	S	S	101	B	B	S
07	B	B	S	S	S	S	S	115	131	G	G	C	C	C	C	C	C	S	S	105	103	S	109	S
08	S	S	101	109	109	109	S	103	G	G	G	115	G	119	G	G	127	111	B	S	S	S	B	S
09	S	S	S	S	S	S	S	S	129	111	G	119	117	G	G	G	G	B	S	S	S	S	S	S
10	S	S	115	115	109	S	S	S	G	G	G	G	G	119	115	G	G	B	S	S	S	S	S	S
11	S	S	S	C	C	C	S	S	G	G	G	G	125	G	G	G	G	B	101	S	109	S	S	S
12	S	S	S	S	S	S	S	109	G	G	G	G	G	135	130	129	121	B	S	109	109	S	S	S
13	109	E	109	109	109	109	105	103	109	109	101	101	119	129	129	125	111	E	S	S	S	S	S	S
14	S	S	119	101	S	S	S	111	G	119	109	141	125	121	G	131	121	101	101	101	101	103	S	S
15	S	S	S	S	S	111	109	S	G	G	G	G	G	G	G	131	G	B	S	S	S	S	S	S
16	S	S	S	S	101	S	S	S	B	G	119	109	115	115	109	107	G	B	S	101	S	S	S	S
17	S	S	S	S	S	S	S	S	G	G	105	G	G	113	G	131	111	111	S	S	S	S	109	S
18	S	S	S	S	S	E	S	S	G	G	G	G	G	G	G	G	G	G	S	S	B	S	B	S
19	B	B	B	B	S	B	B	S	G	G	B	B	B	B	G	C	C	119	S	S	S	121	S	S
20	S	S	E	B	E	B	B	B	G	G	G	G	G	129	121	G	G	B	B	B	S	B	B	B
21	S	S	B	B	E	B	S	B	B	G	G	G	G	G	G	G	G	B	B	B	B	115	B	B
22	B	B	B	B	B	B	B	B	131	149	129	G	G	G	G	G	G	B	B	S	S	S	S	S
23	S	S	E	S	109	105	S	101	101	S	G	G	G	G	G	G	G	135	S	S	S	S	S	S
24	S	S	S	E	S	S	S	S	G	G	G	G	G	G	G	G	G	S	B	S	S	S	S	S
25	S	S	E	S	S	S	S	S	151	141	G	G	G	G	G	G	G	B	B	S	S	S	S	S
26	B	S	S	S	S	109	105	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	S
27	S	S	S	S	S	S	S	101	B	G	G	G	B	G	B	B	B	B	B	B	S	B	B	B
28	B	S	B	S	S	B	B	S	B	G	G	G	G	G	G	G	G	B	B	S	S	S	B	S
29	101	101	S	S	S	E	S	S	G	G	119	119	G	G	G	G	G	B	B	S	S	S	S	S
30	S	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S
31	S	S	S	S	S	S	S	S	G	G	151	141	111	G	G	G	111	107	103	105	111	S	S	S
MED			109	109	109	109	105	106	129	125	119	119	118	119	119	125	111	107	101	101	101			
NO	2	2	5	6	6	8	5	8	11	11	14	12	12	14	10	9	11	10	7	8	8	4	4	4



TABLE 83  
IONOSPHERIC DATA

(M3000)F2, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	290	300	280	290	290	290	310	310	300	310	315	310	300	295	285	290	285	295	285	280	295	300	295	300
02	300	310	310	255	250	270	275	285	320	310	295	295	280	275	275	235	260	260	275	280	280	285	285	275
03	280	280	A	A	A	280	270	280	305	330	300	300	310	285	280	280	290	285	280	280	290	290	280	280
04	295	300	300	300	300	300	290	280	320	320	325	295	290	290	285	280	275	285	290	290	300	300	290	290
05	300	280	300	290	300	300	290	290	330	330	310	300	290	290	270	280	280	275	290	285	290	290	290	295
06	305	270	275	295	290	310	290	300	310	295	310	285	285	280	270	280	290	280	280	290	285	290	275	270
07	270	255	275	270	275	275	315	290	295	300	320	C	C	C	C	C	C	285	280	290	310	300	290	275
08	280	270	270	290	300	310	280	280	295	315	305	305	285	280	270	270	275	280	280	300	270	300	290	290
09	270	270	280	270	290	305	290	300	315	330	310	300	300	295	290	295	295	290	285	295	290	290	300	295
10	295	290	260	255	260	260	285	295	320	325	300	295	290	285	275	290	295	285	285	300	280	290	280	310
11	305	290	280	C	C	C	270	310	320	315	330	285	300	300	295	290	300	285	285	290	295	300	290	305
12	270	270	275	290	300	280	285	315	325	325	300	300	305	295	290	285	305	300	290	310	305	300	300	295
13	320	290	290	305	285	280	300	300	335	315	320	310	305	305	325	290	300	300	305	300	315	310	310	300
14	310	285	280	285	290	280	295	310	320	345	320	305	310	305	305	290	305	305	300	305	310	310	290	300
15	310	275	275	295	290	300	305	325	340	330	320	305	300	300	300	300	300	305	300	295	295	290	300	300
16	280	280	270	280	295	300	300	310	340	330	320	320	300	295	290	290	295	290	300	300	320	340	310	290
17	290	285	300	295	285	290	280	310	340	340	315	320	300	300	290	300	315	295	300	315	315	310	305	300
18	300	290	300	305	305	305	290	300	340	340	320	305	305	295	290	285	295	310	290	305	310	320	300	300
19	300	285	275	290	290	295	280	285	355	305	335	325	305	290	290	285	C	C	295	295	300	295	295	300
20	305	300	300	305	300	280	290	290	330	340	305	310	300	300	295	290	305	300	300	305	305	295	280	275
21	270	260	285	300	285	255	255	280	350	325	310	295	290	270	265	255	260	S	F	U F	F	U B	U B	F
22	260	F	250	270	260	230	260	290	340	310	310	300	290	285	290	280	300	310	280	300	300	295	290	290
23	280	275	270	275	290	260	280	280	310	320	315	310	280	280	275	280	280	285	280	295	290	295	290	275
24	270	270	270	295	285	280	290	300	330	330	300	300	295	280	270	260	280	280	290	260	265	260	260	260
25	270	270	280	255	260	270	290	295	310	310	305	300	295	290	285	285	280	280	290	280	280	290	280	265
26	265	255	275	280	300	310	280	295	330	320	310	295	290	280	265	275	280	280	280	285	290	275	290	280
27	275	270	290	295	305	295	275	290	310	300	260	295	290	280	260	265	275	270	285	285	280	285	280	290
28	265	280	270	280	285	275	285	295	330	300	320	300	285	280	285	275	270	280	285	295	295	265	280	280
29	270	270	270	280	305	295	305	300	315	300	310	270	280	260	255	255	265	275	270	280	280	265	270	270
30	285	240	230	290	280	245	260	285	315	305	315	300	290	280	280	280	280	285	290	290	300	290	295	280
31	285	290	270	275	265	275	285	295	320	315	315	300	290	280	275	285	280	285	295	295	300	310	295	295
MED	285	280	275	290	290	280	285	295	320	320	310	300	290	290	285	280	285	285	290	295	295	295	290	290
NO	31	30	30	29	29	30	31	31	31	31	31	30	30	30	30	30	29	29	30	31	31	30	31	31

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 84  
IONOSPHERIC DATA

(M3000)F<sub>1</sub>, January 1957

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01												L	L	L	L	L	L							
02											L	L	L	L	L	L								
03											L	L	L	L	L	L	L							
04										L	L	L	L	L	L	L	L							
05											L	L	L	L	L	L	L							
06										L	L	L	C	C	C	C	C							
07									L	L	L	L	L	L	L	L	L							
08									L	L	L	L	L	L	L	L	L							
09									L	L	L	L	L	L	L	L	L							
10											L	L	L	L	L	L								
11									L	L	L	L	L	L	L	L	L							
12										L	L	L	L	L	L	L	L							
13									L	L		L	L	L	L	L	L							
14										L	L	L	L	L	L	L	L							
15										L	L	L	L	L	L	L	L							
16													L	L	L	L	L							
17											L	L	L	L	L	L	L							
18											L	L	L	L	L	L	L							
19									L	L		L	L	L	B	L	C							
20											L	L	L	L	L	L	L	L						
21											L	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	L							
23											L	L	L	L	L	L	L							
24											L	L	L	L	L	L	L							
25										L	L	L	L	L	L	L	L							
26											L	L	L	L	L	L	L							
27												L	L	L	L	L	L							
28											L	L	L	L	L	L	L							
29										L	L	L	L	L	L	L	L							
30											L	L	L	L	L	L	L	L						
31											L	L	L	L	L	L	L							
MED																								
NO																								

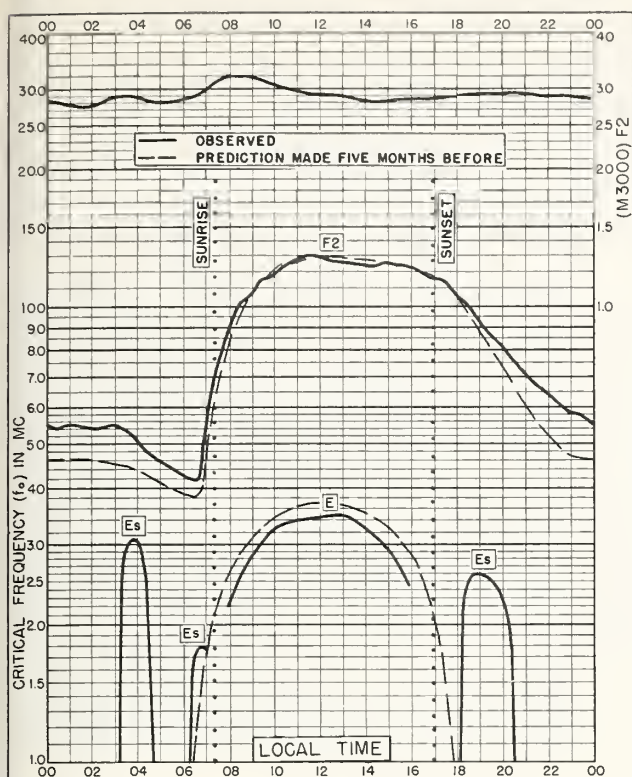


Fig. 1. WASHINGTON, D.C.  
38.7°N, 77.1°W JANUARY 1957

NBS 503

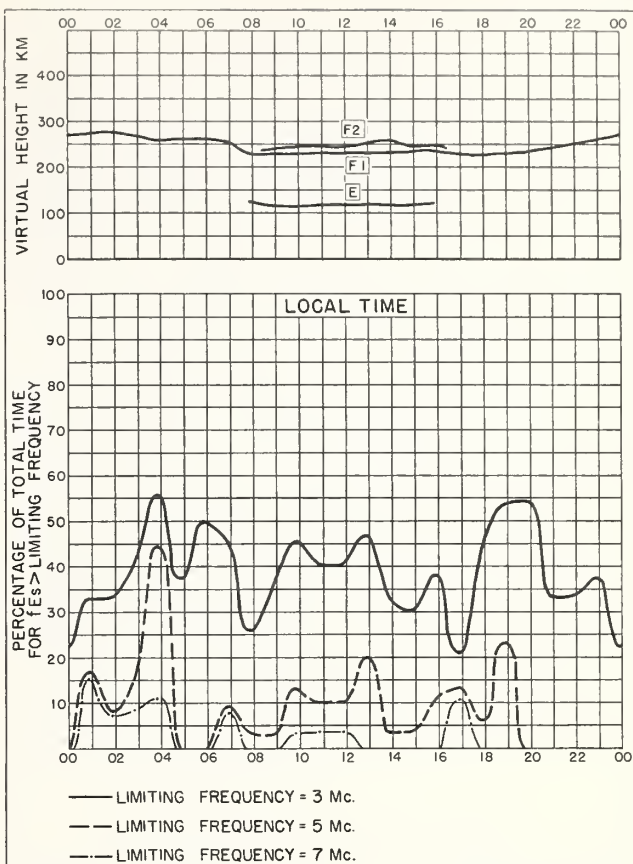


Fig. 2. WASHINGTON, D.C. JANUARY 1957

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 1957

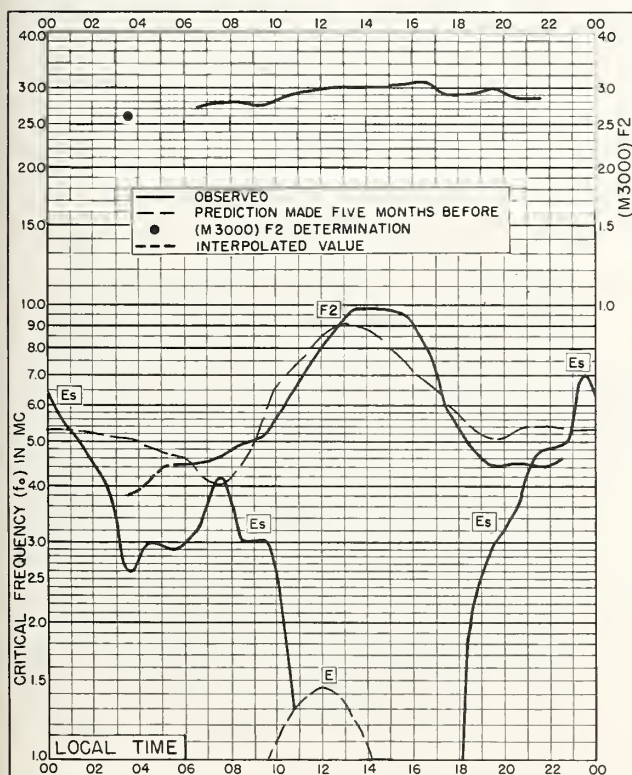


Fig. 3. POINT BARROW, ALASKA  
71.3°N, 156.8°W DECEMBER 1956

NBS 503

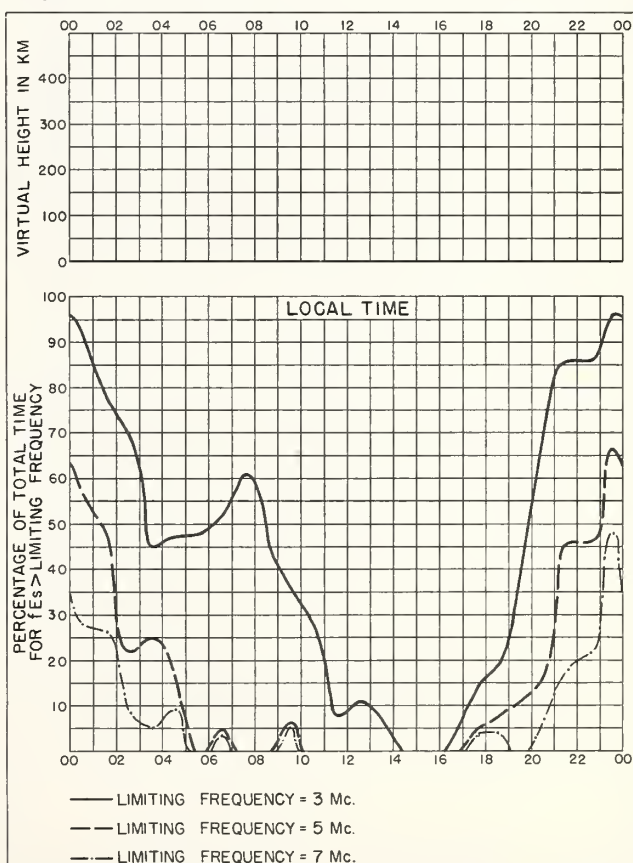


Fig. 4. POINT BARROW, ALASKA DECEMBER 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 1957



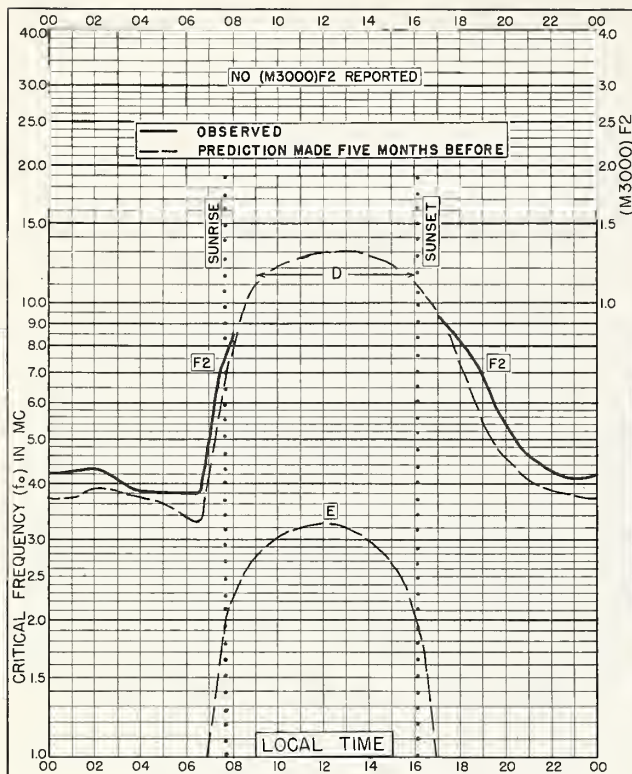


Fig. 5. GRAZ, AUSTRIA  
47.1°N, 15.5°E

DECEMBER 1956

NBS 503

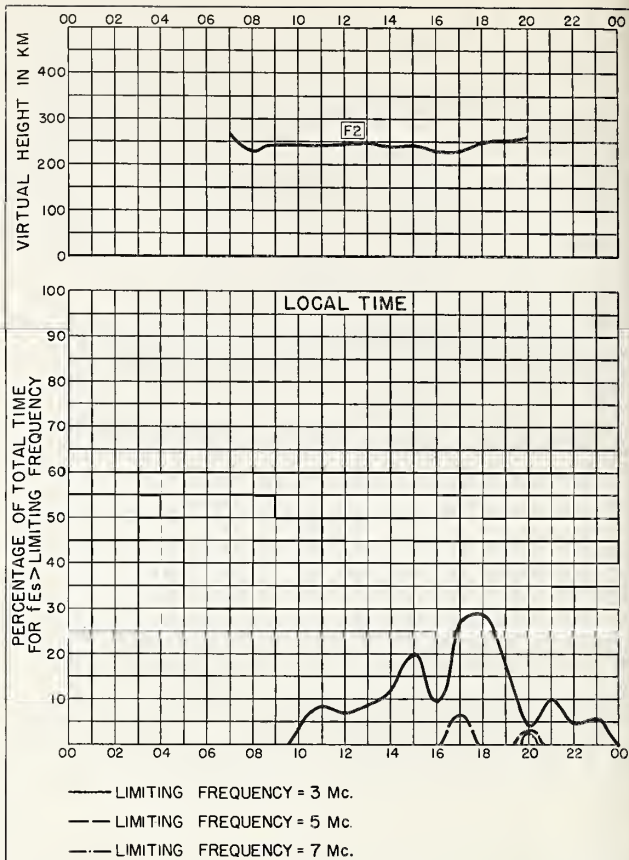


Fig. 6. GRAZ, AUSTRIA

DECEMBER 1956

NBS 490

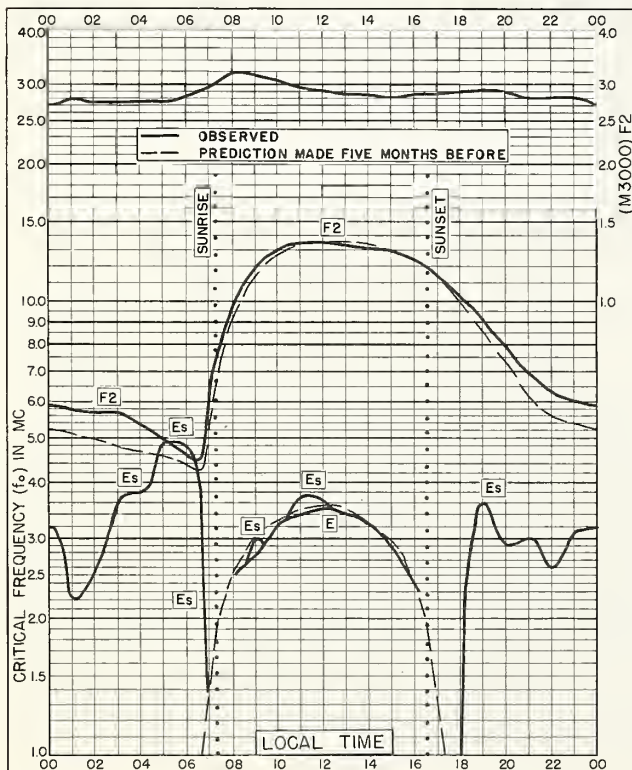


Fig. 7. FT. MONMOUTH, NEW JERSEY  
40.3°N, 74.1°W

DECEMBER 1956

NBS 503

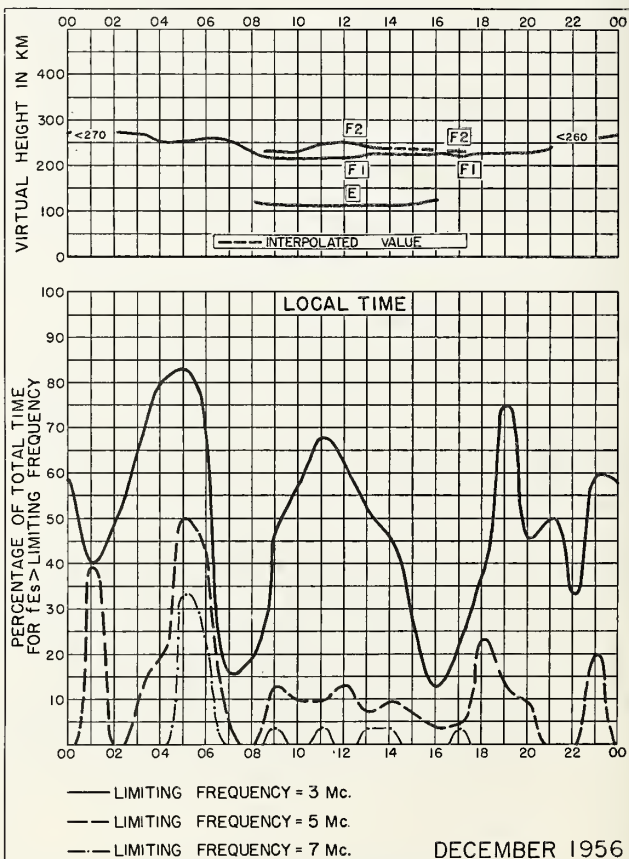


Fig. 8. FT. MONMOUTH, NEW JERSEY

DECEMBER 1956

NBS 490

N. S. INTERNATIONAL RESEARCH OFFICE 510877

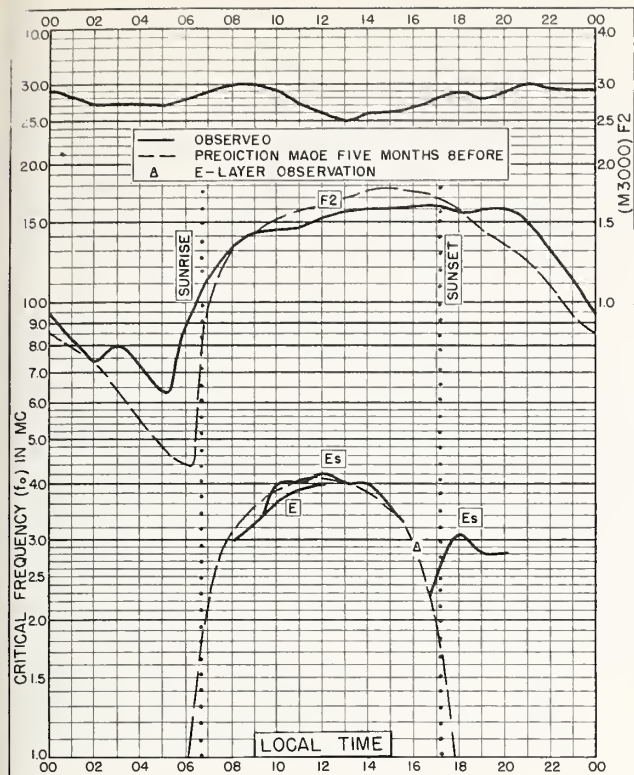
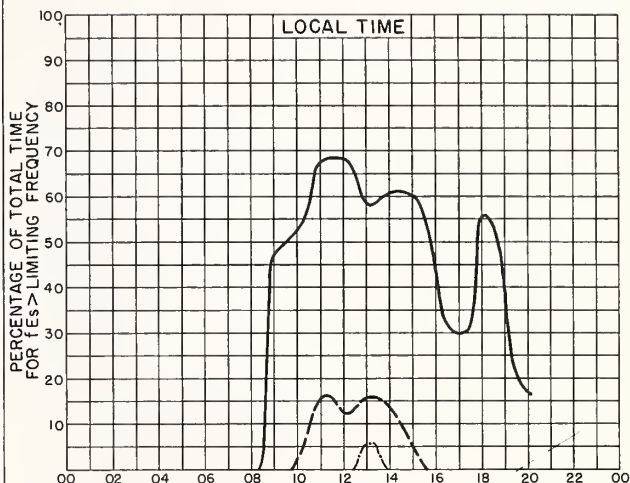
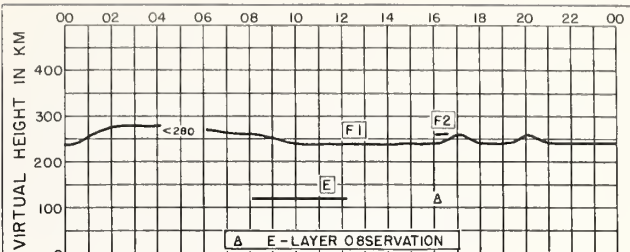


Fig. 9. FORMOSA, CHINA  
25.0°N, 121.5°E DECEMBER 1956

NBS 503



— LIMITING FREQUENCY = 3 Mc.  
— LIMITING FREQUENCY = 5 Mc.  
— LIMITING FREQUENCY = 7 Mc.

Fig. 10. FORMOSA, CHINA DECEMBER 1956

NBS 490

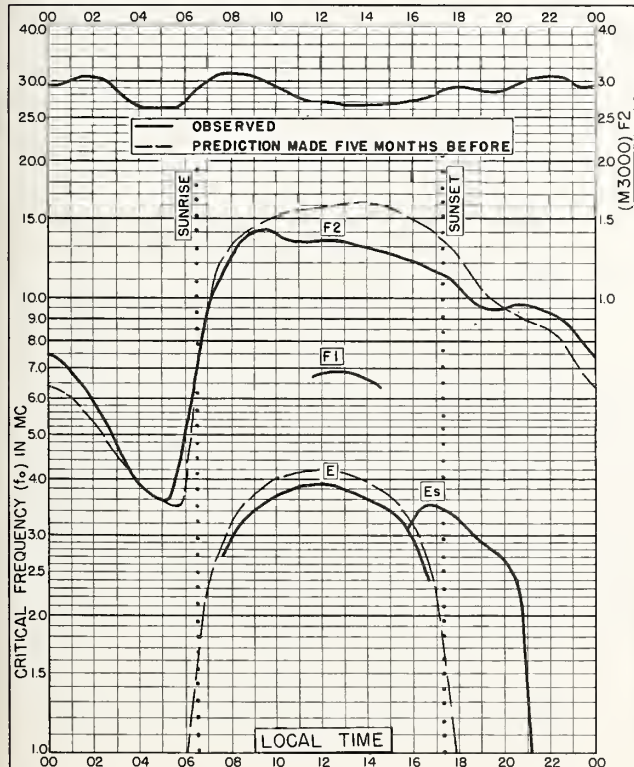
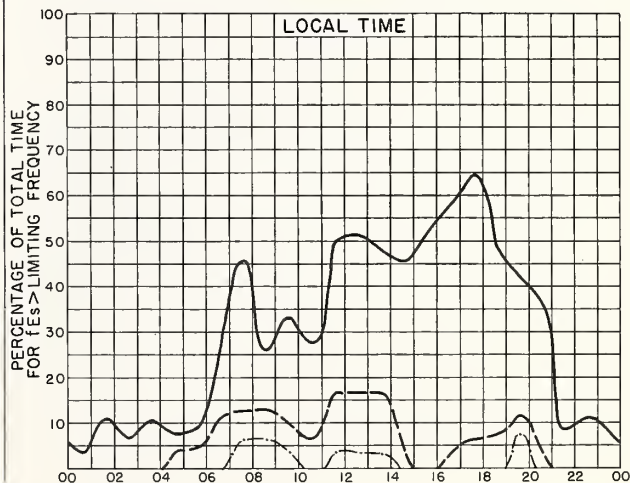
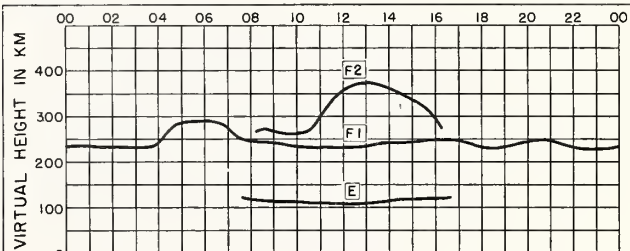


Fig. 11. MAUI, HAWAII  
20.8°N, 156.5°W DECEMBER 1956

NBS 503



— LIMITING FREQUENCY = 3 Mc.  
— LIMITING FREQUENCY = 5 Mc.  
— LIMITING FREQUENCY = 7 Mc.

Fig. 12. MAUI, HAWAII DECEMBER 1956

NBS 490

NBS 490



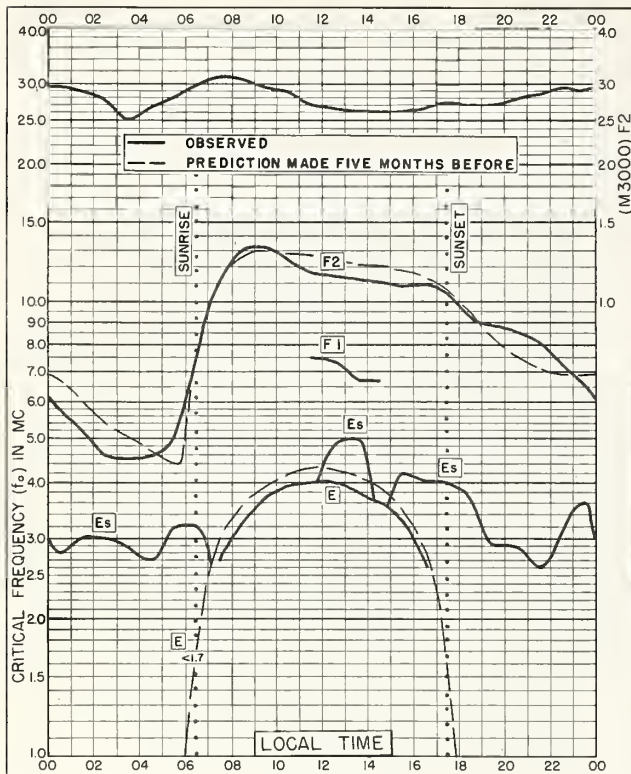


Fig. 13. PUERTO RICO, W.I.  
18.5°N, 67.2°W DECEMBER 1956

NBS 503

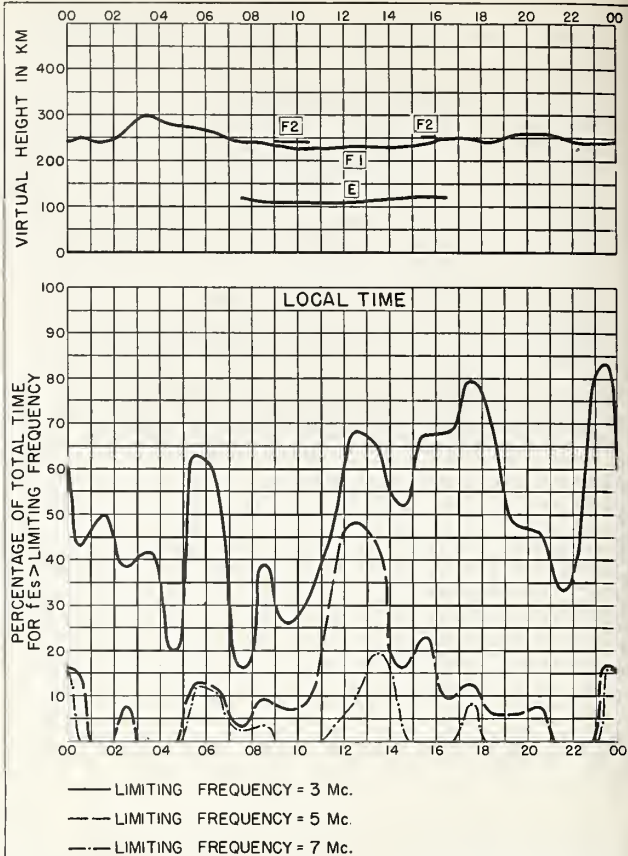


Fig. 14. PUERTO RICO, W.I. DECEMBER 1956

NBS 490

NBS 503

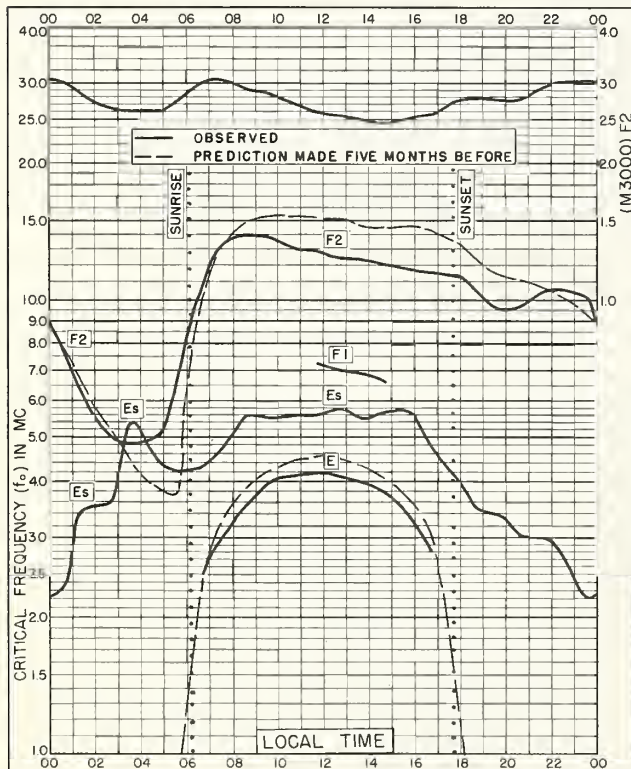


Fig. 15. PANAMA CANAL ZONE  
9.4°N, 79.9°W DECEMBER 1956

NBS 503

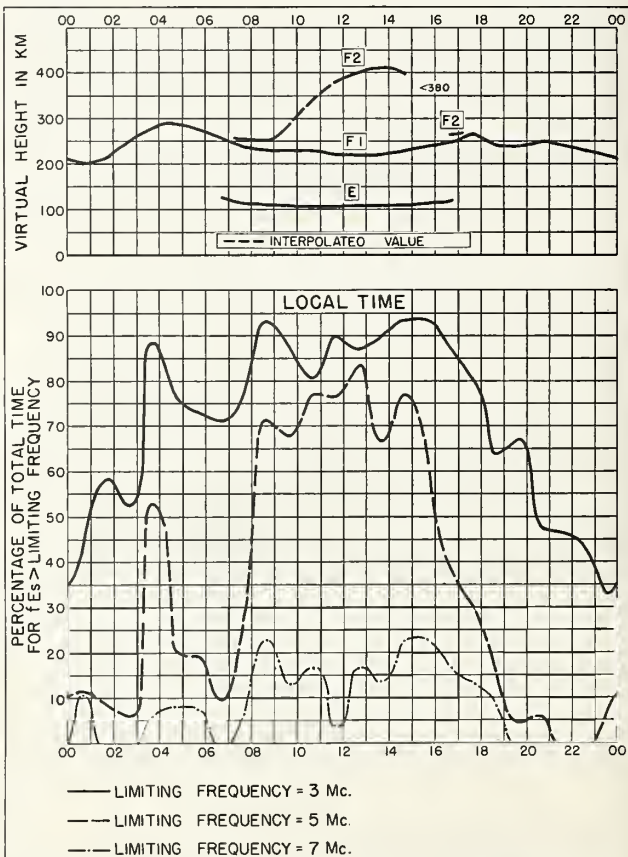


Fig. 16. PANAMA CANAL ZONE DECEMBER 1956

NBS 490

NBS 503



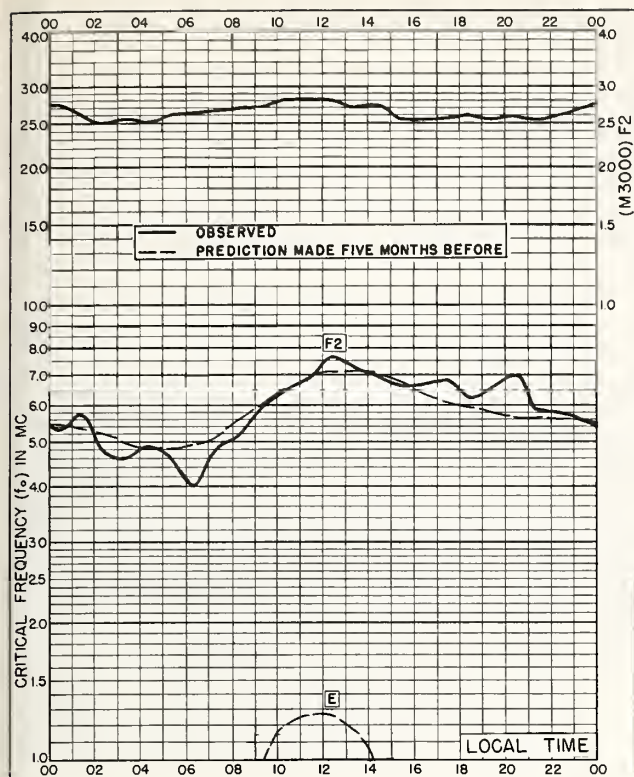


Fig. 17. THULE, GREENLAND  
76.6°N, 68.7°W NOVEMBER 1956

NBS 505

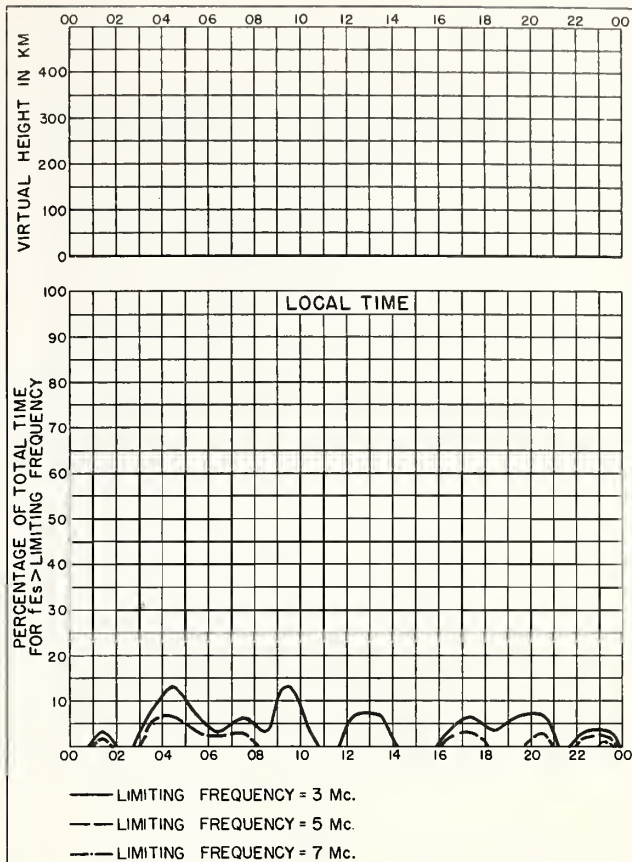


Fig. 18. THULE, GREENLAND NOVEMBER 1956

NBS 490

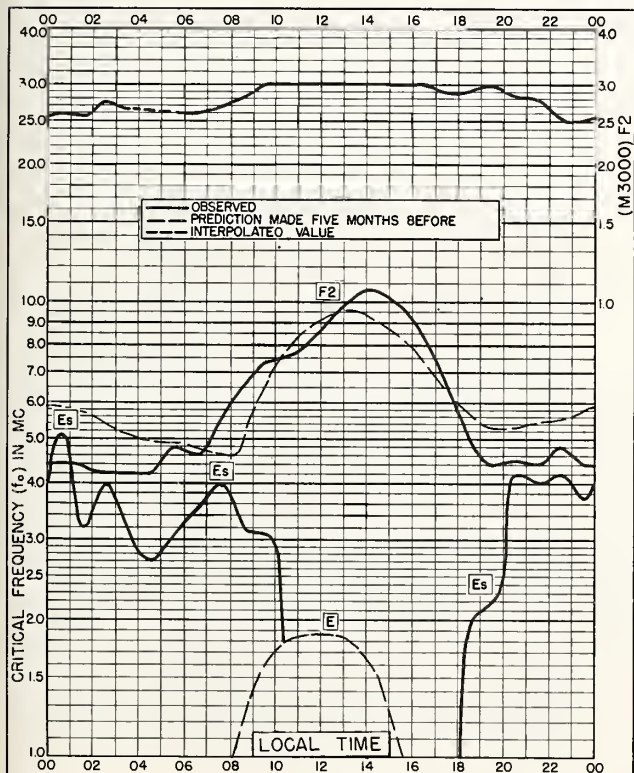


Fig. 19. POINT BARROW, ALASKA  
71.3°N, 156.8°W NOVEMBER 1956

NBS 503

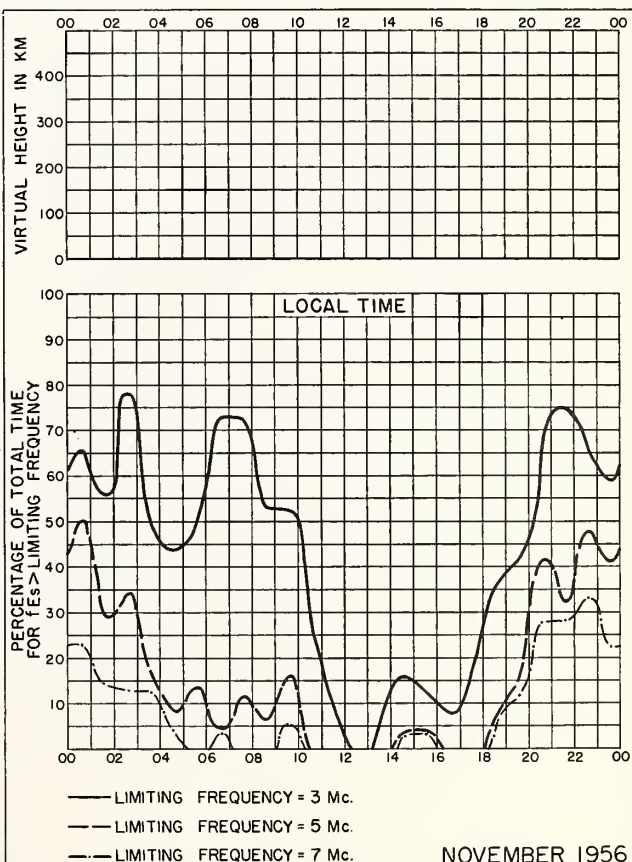


Fig. 20. POINT BARROW, ALASKA NOVEMBER 1956

NBS 490

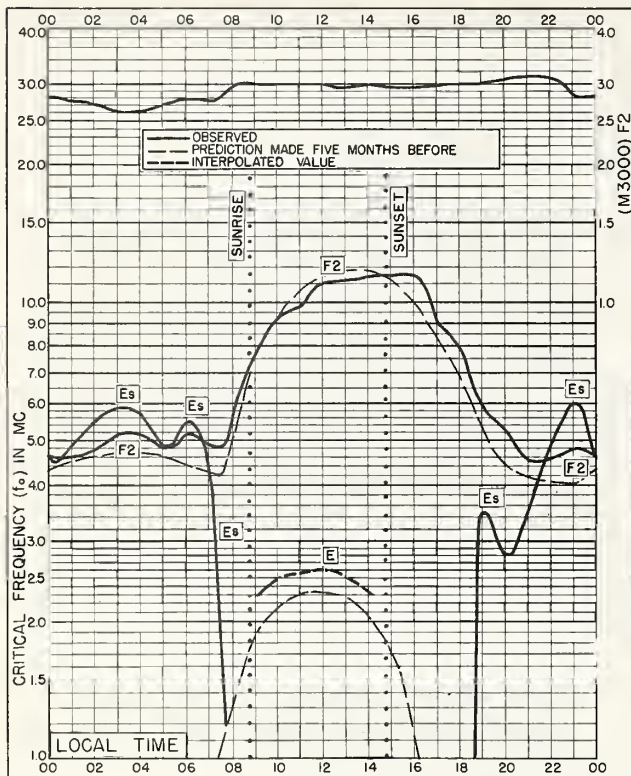


Fig. 21. FAIRBANKS, ALASKA  
64.9° N, 147.8° W NOVEMBER 1956

NBS 503

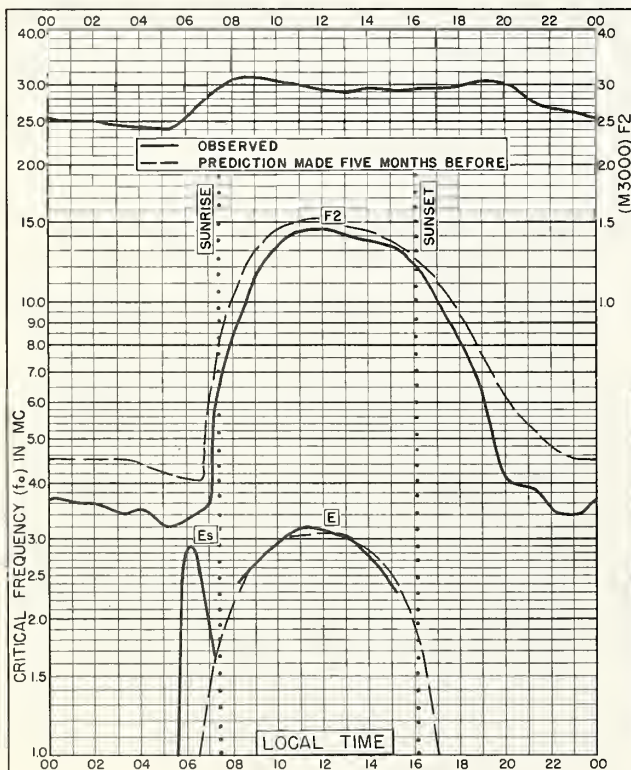


Fig. 23. ADAK, ALASKA  
51.9° N, 176.6° W NOVEMBER 1956

NBS 503

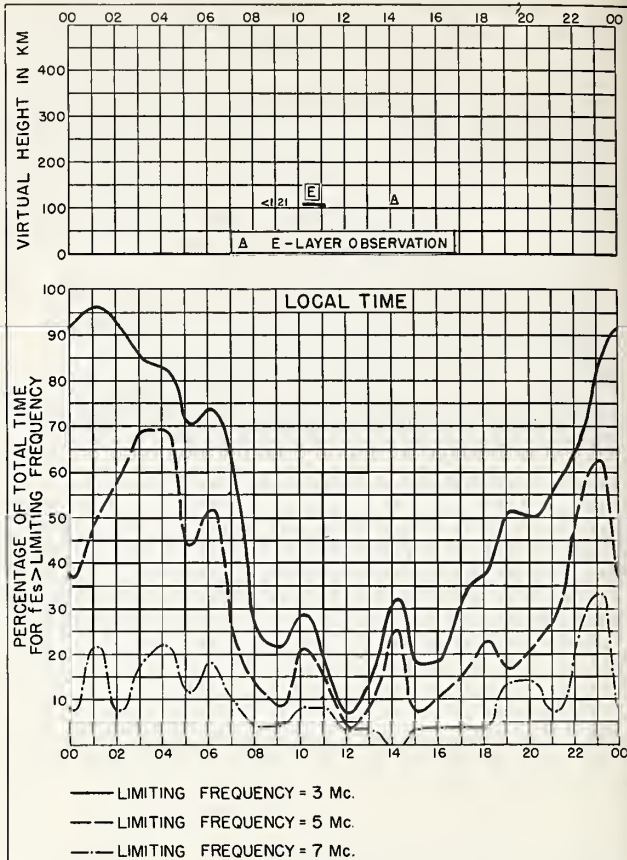


Fig. 22. FAIRBANKS, ALASKA NOVEMBER 1956

NBS 490

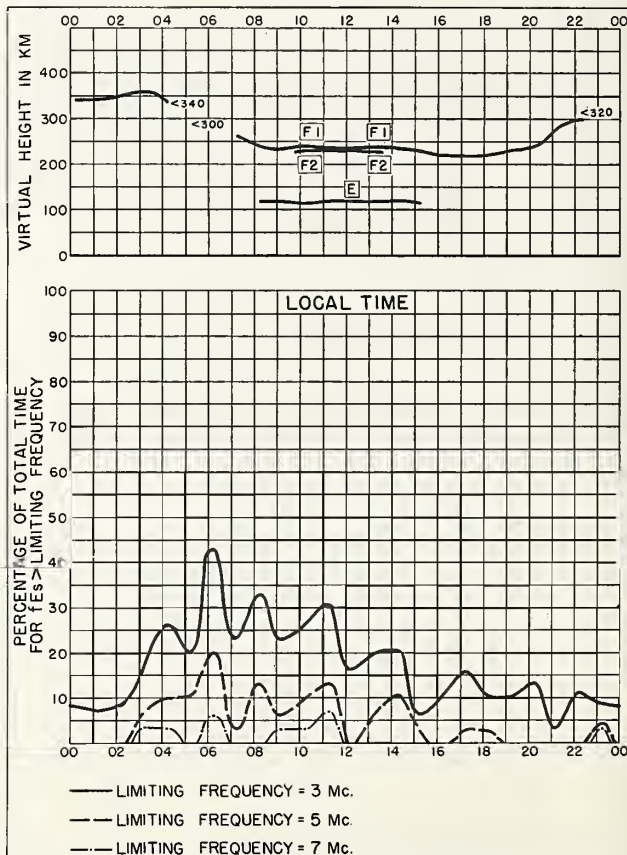


Fig. 24. ADAK, ALASKA NOVEMBER 1956

NBS 490



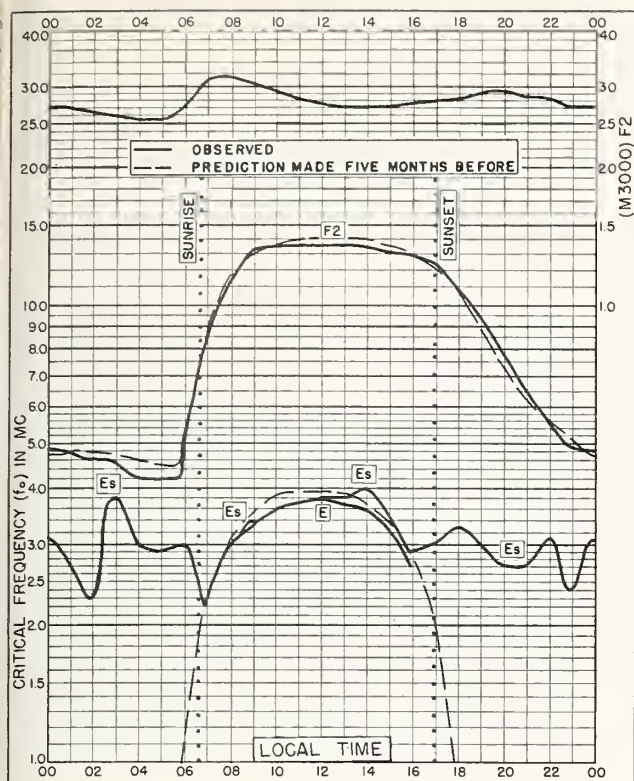


Fig. 25. WHITE SANDS, NEW MEXICO  
32.3°N, 106.5°W NOVEMBER 1956

NBS 503

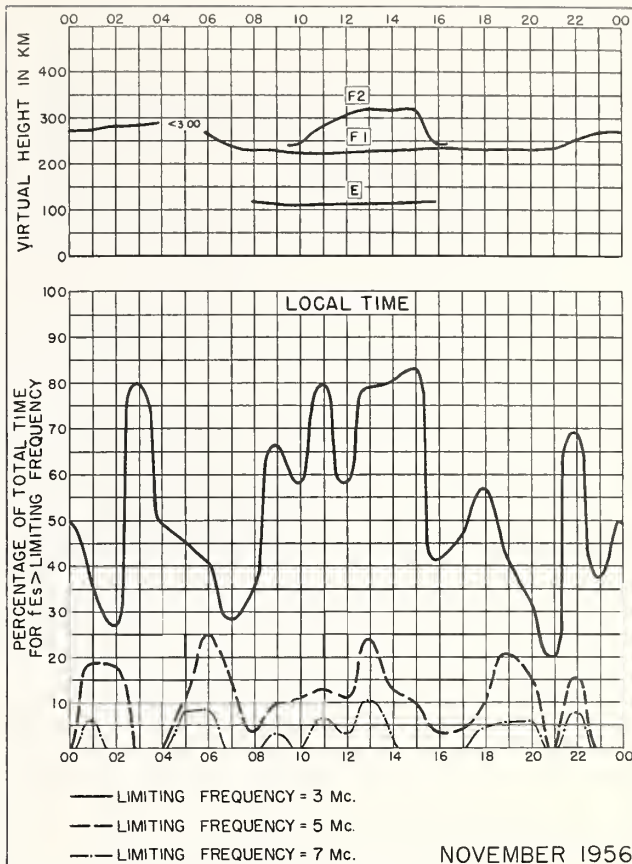


Fig. 26. WHITE SANDS, NEW MEXICO NOVEMBER 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 1957

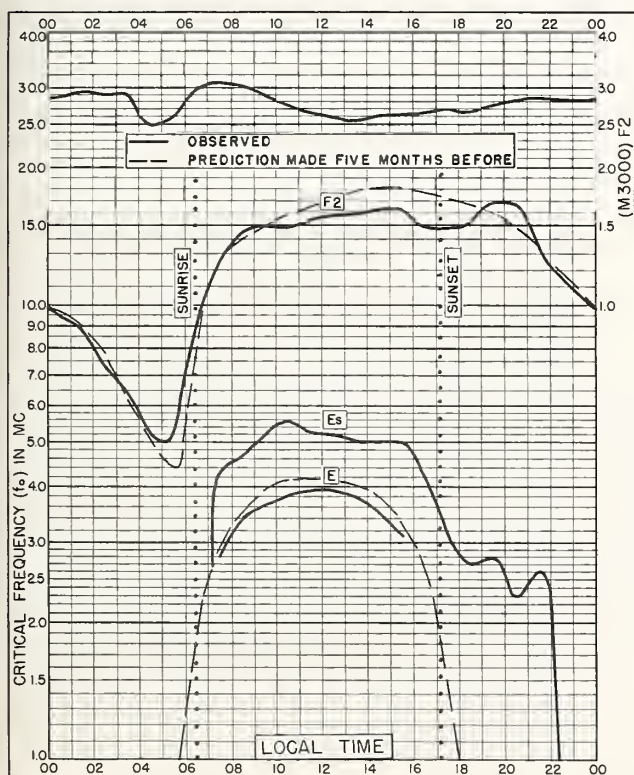


Fig. 27. OKINAWA I.  
26.3°N, 127.8°E NOVEMBER 1956

NBS 503

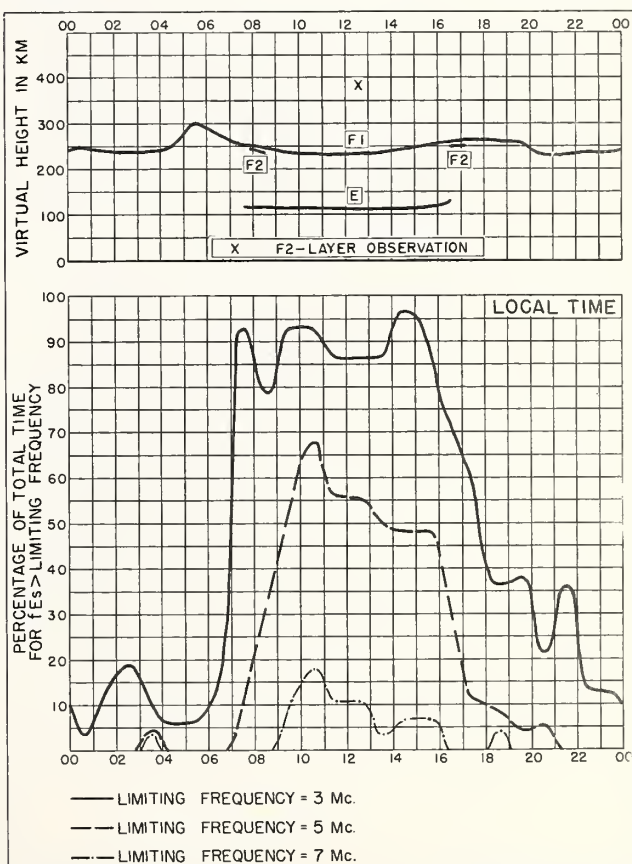


Fig. 28. OKINAWA I. NOVEMBER 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 1957

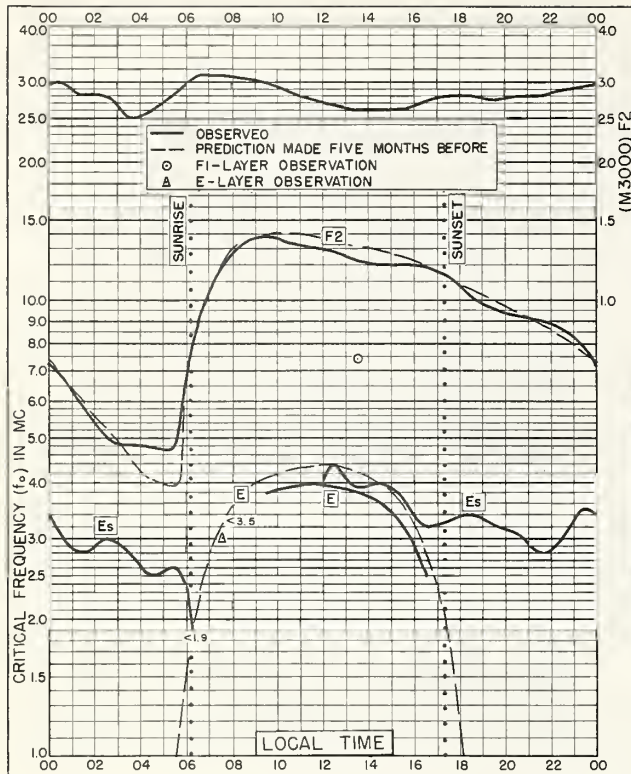


Fig. 29. PUERTO RICO, W. I.

18.5°N, 67.2°W

NOVEMBER 1956

NBS 503

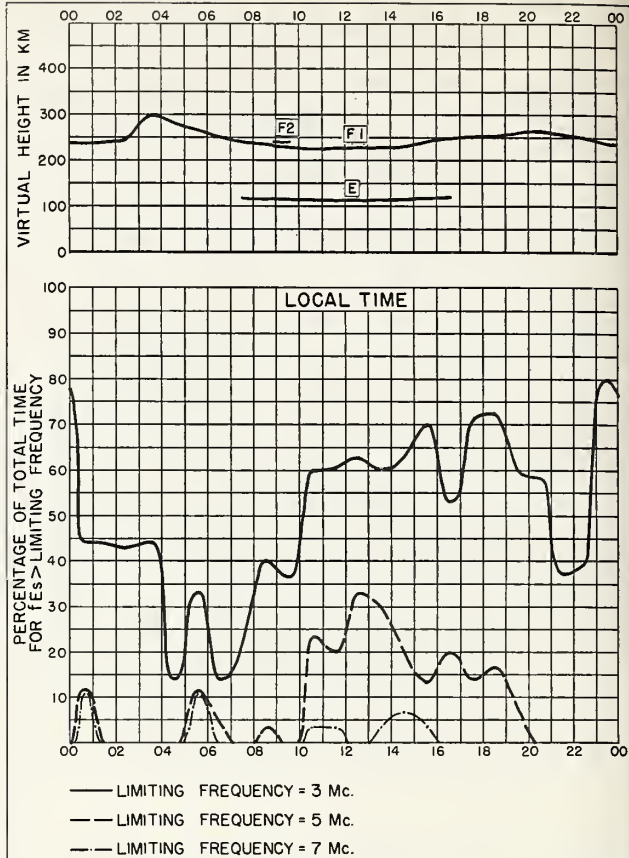


Fig. 30. PUERTO RICO, W. I.

NOVEMBER 1956

NBS 490

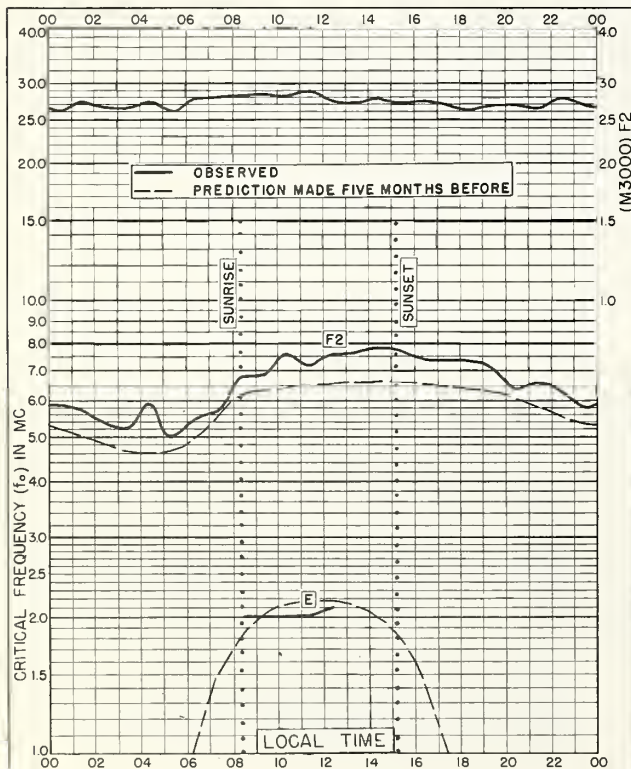


Fig. 31. THULE, GREENLAND

76.6°N, 68.7°W

OCTOBER 1956

NBS 503

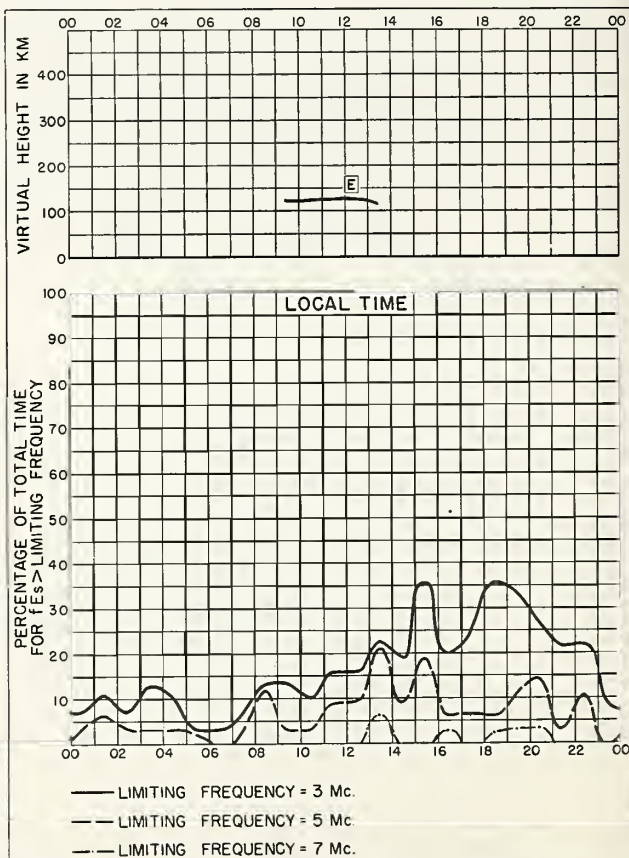


Fig. 32. THULE, GREENLAND

OCTOBER 1956

NBS 490



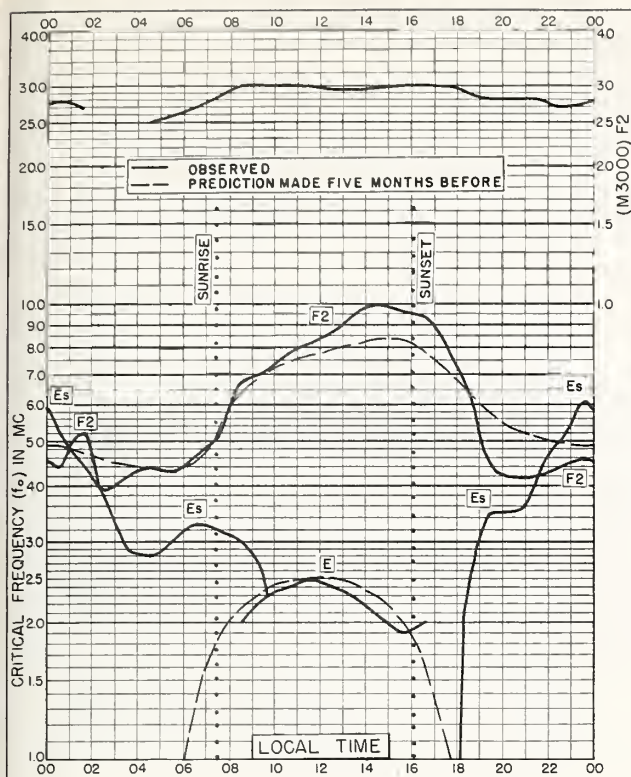


Fig. 33. POINT BARROW, ALASKA  
71.3°N, 156.8°W  
OCTOBER 1956

NBS 503

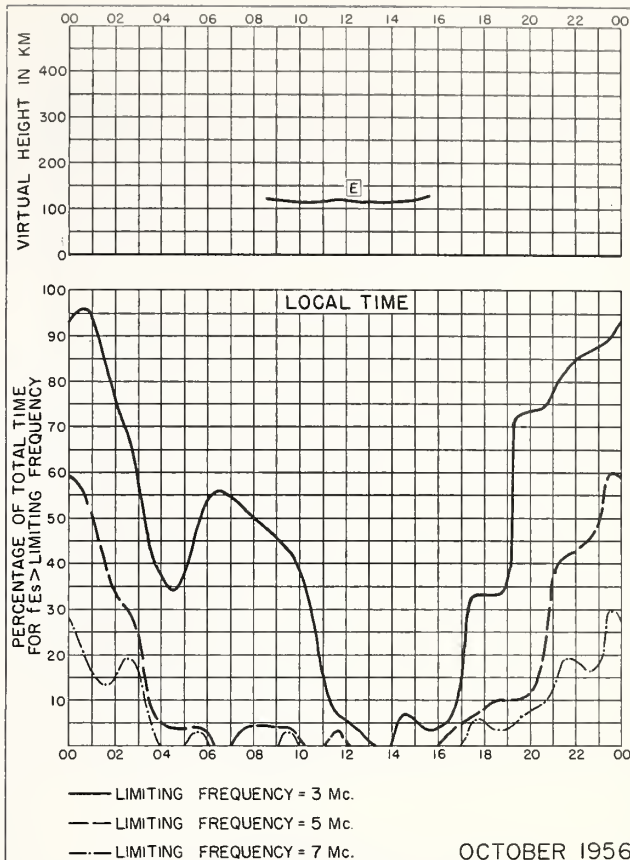


Fig. 34. POINT BARROW, ALASKA

OCTOBER 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 312071

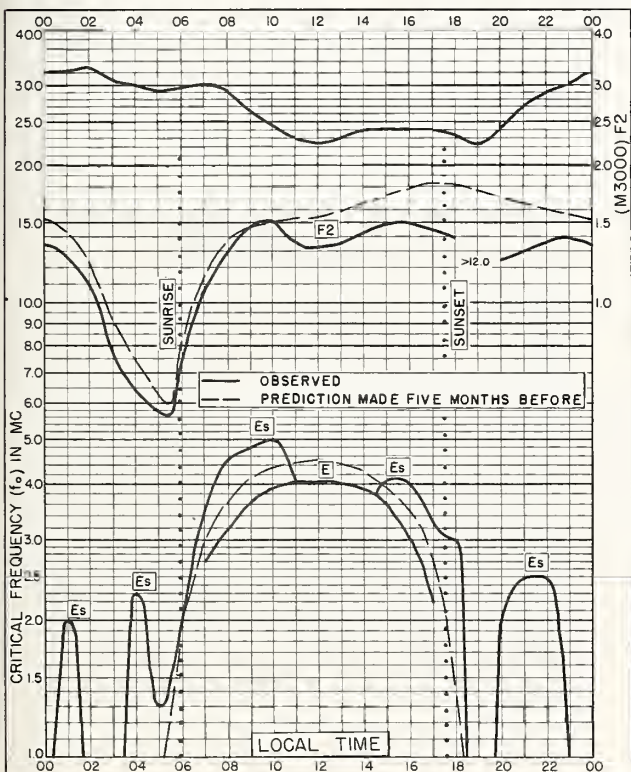


Fig. 35. BAGUIO, P. I.  
16.4°N, 120.6°E  
OCTOBER 1956

NBS 503

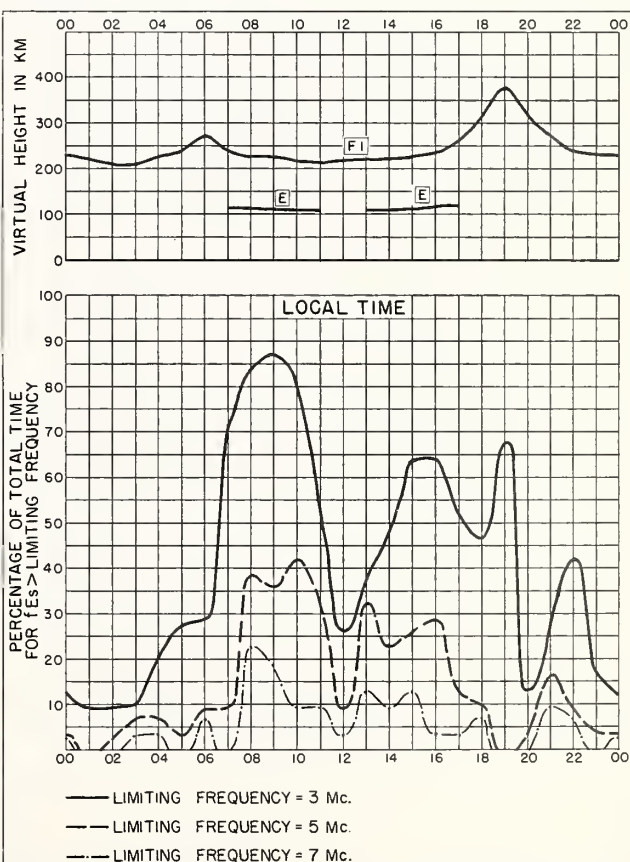


Fig. 36. BAGUIO, P. I.

OCTOBER 1956

NBS 490

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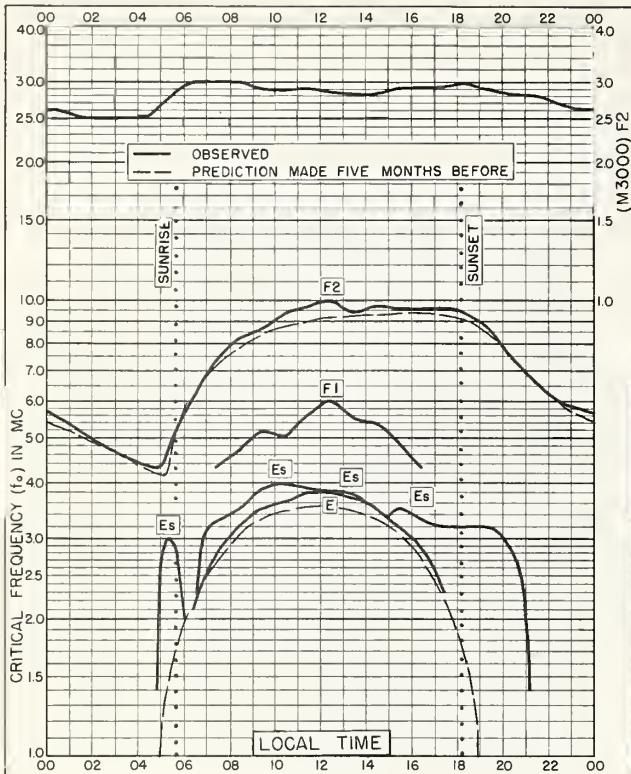


Fig. 37. De BILT, HOLLAND  
52.1°N, 5.2°E SEPTEMBER 1956

NBS 503

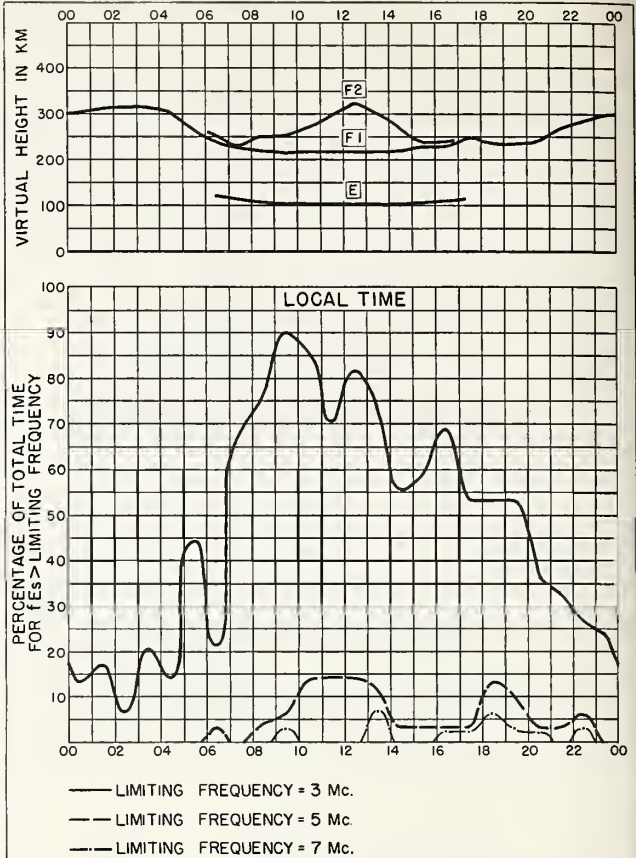


Fig. 38. De BILT, HOLLAND SEPTEMBER 1956

NBS 490

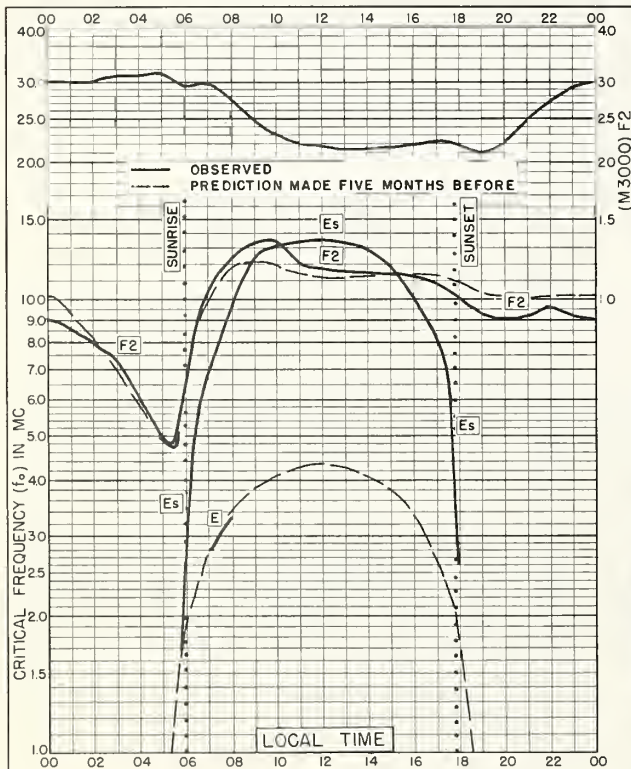


Fig. 39. HUANCAYO, PERU  
12.0°S, 75.3°W SEPTEMBER 1956

NBS 503

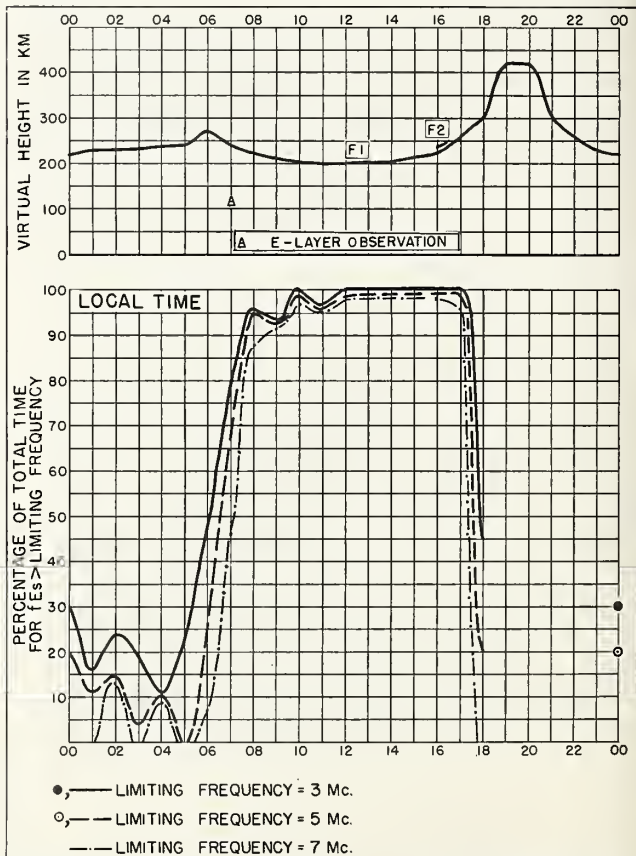


Fig. 40. HUANCAYO, PERU SEPTEMBER 1956

NBS 490

N. S. INTERNATIONAL METEOROLOGICAL OFFICE 51877



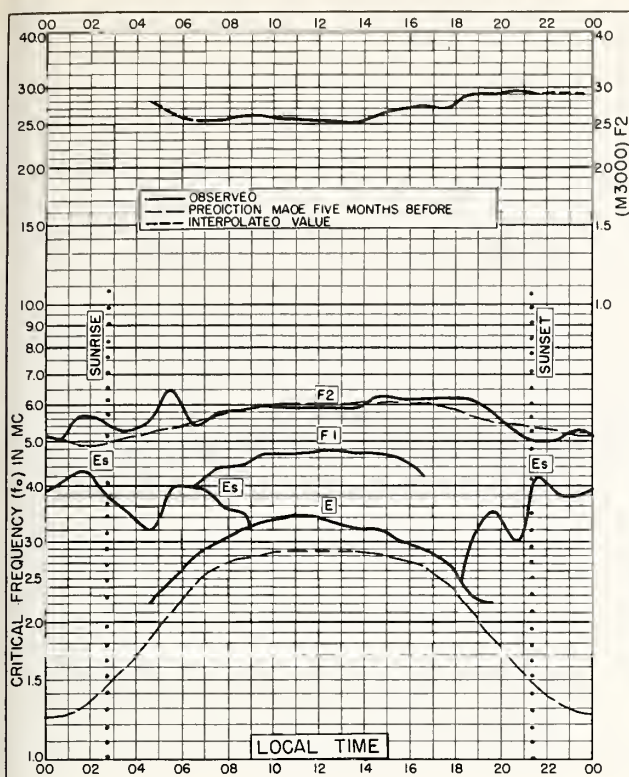


Fig. 41. POINT BARROW, ALASKA  
71.3°N, 156.8°W AUGUST 1956

NBS 503

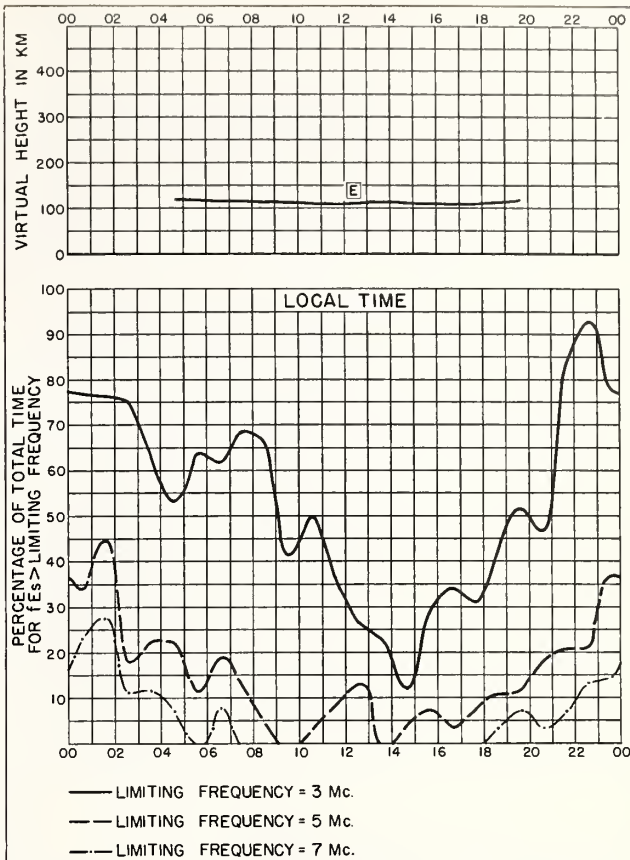


Fig. 42. POINT BARROW, ALASKA AUGUST 1956

NBS 490

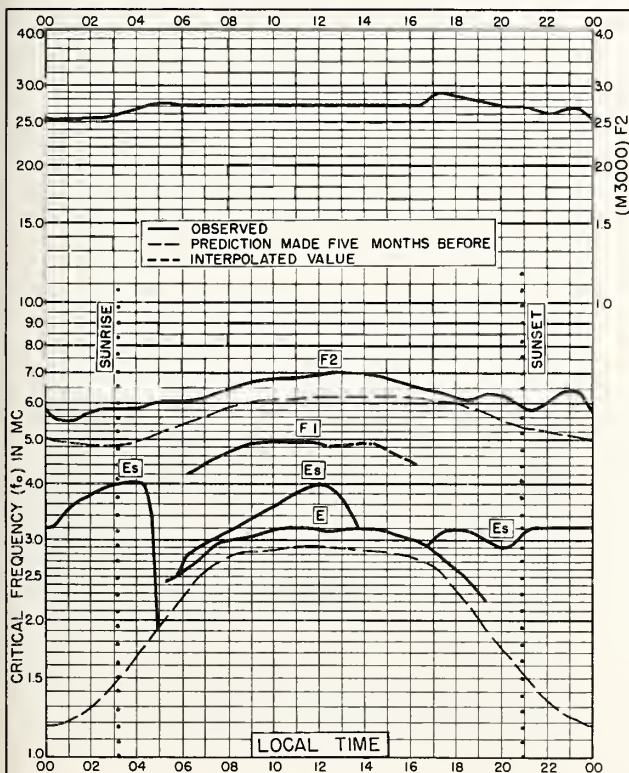


Fig. 43. TROMSØ, NORWAY  
69.7°N, 19.0°E AUGUST 1956

NBS 503

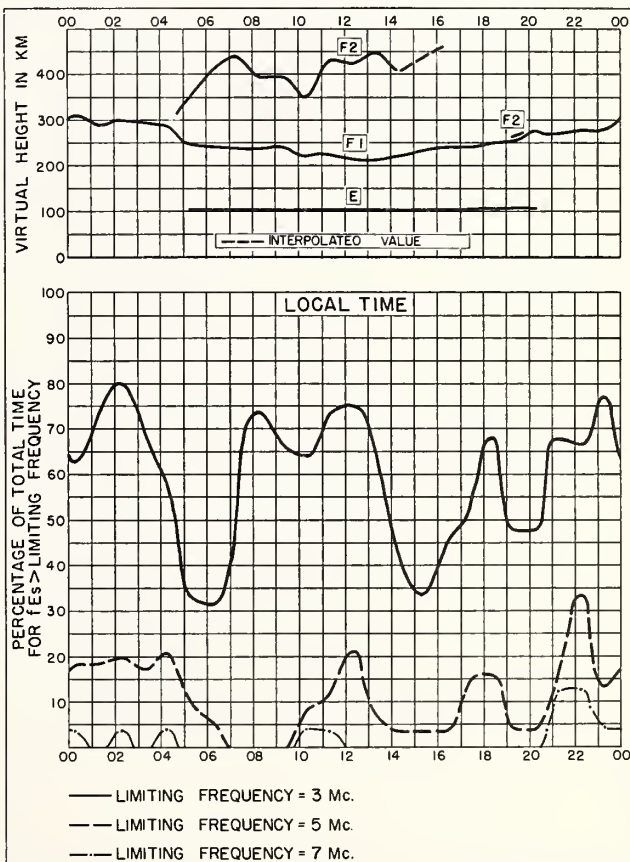


Fig. 44. TROMSØ, NORWAY AUGUST 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 1957

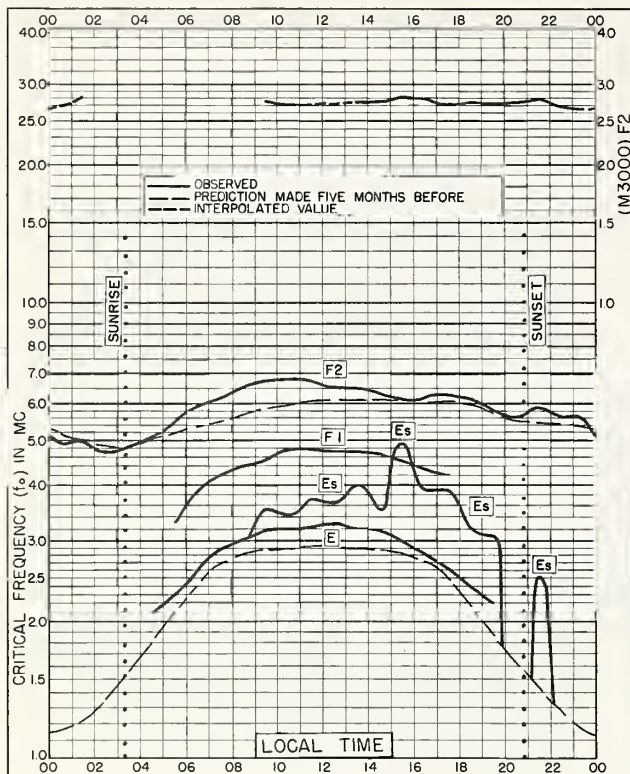


Fig. 45. GODHAVN, GREENLAND  
69.2°N, 53.5°W

AUGUST 1956

NBS 503

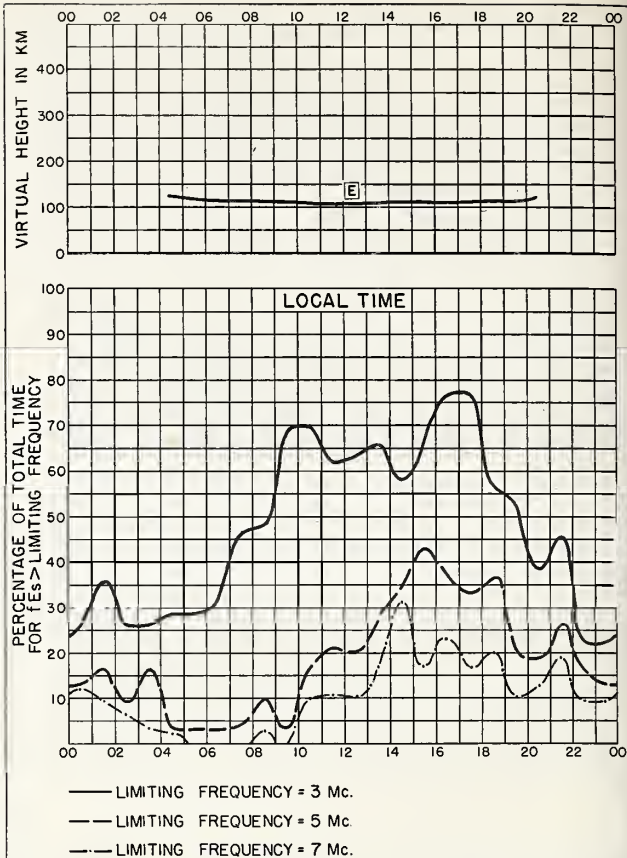


Fig. 46. GODHAVN, GREENLAND

AUGUST 1956

NBS 490

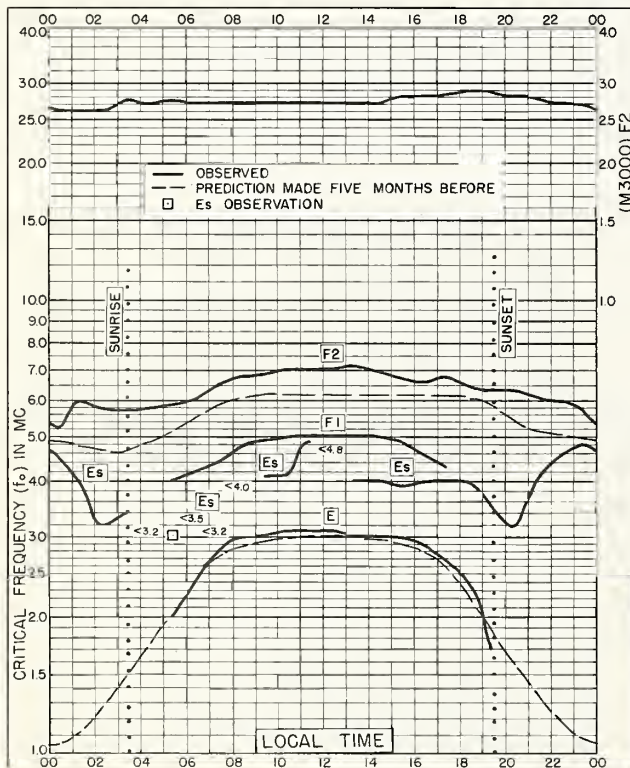


Fig. 47. KIRUNA, SWEDEN  
67.8°N, 20.3°E

AUGUST 1956

NBS 503

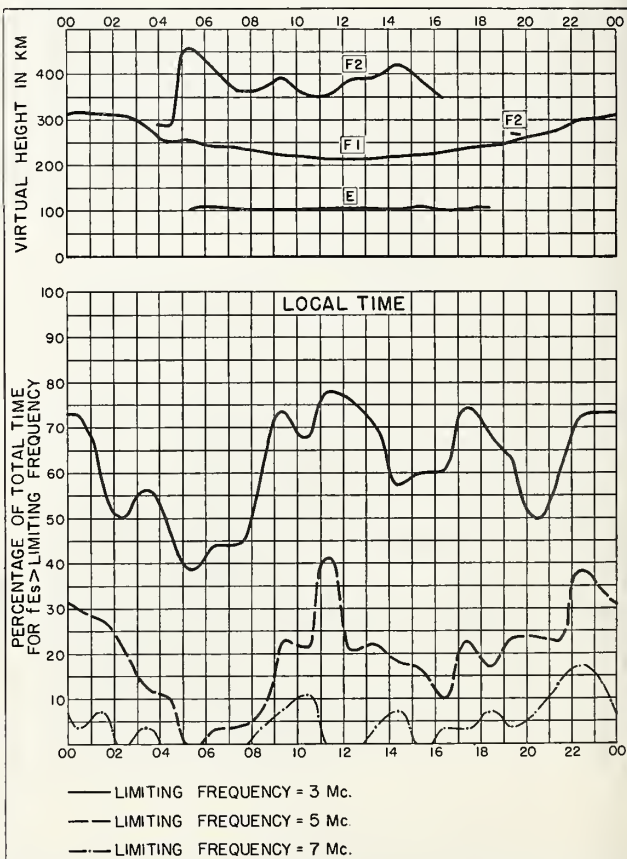


Fig. 48. KIRUNA, SWEDEN

AUGUST 1956

NBS 490

NBS 490



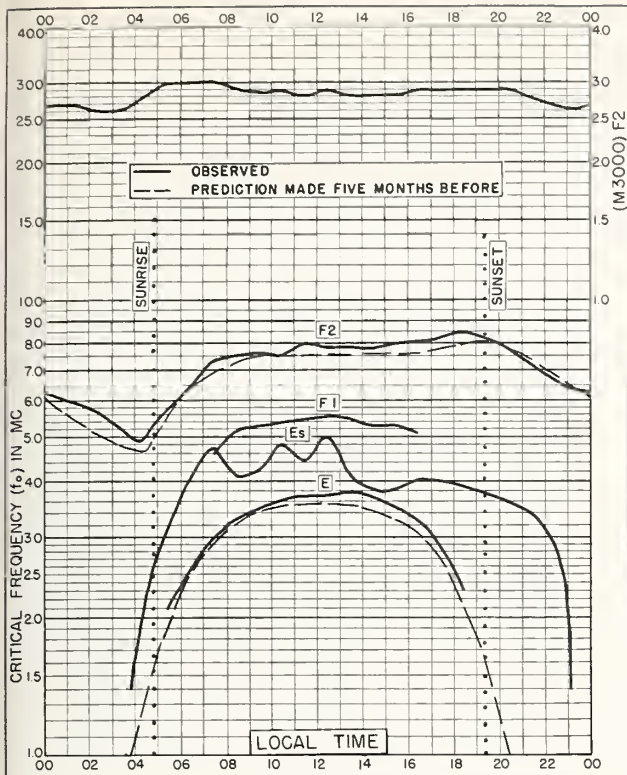


Fig. 49. De BILT, HOLLAND  
52.1°N, 5.2°E

AUGUST 1956

NBS 503

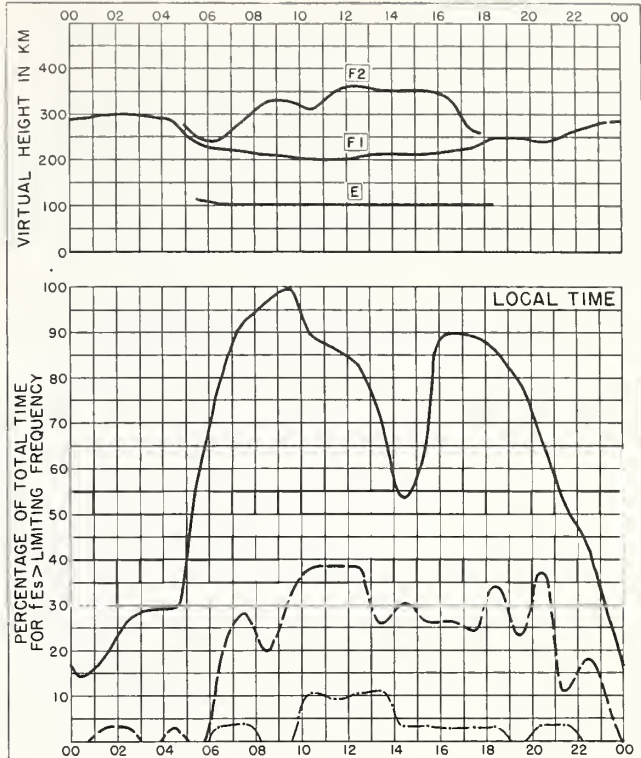


Fig. 50. De BILT, HOLLAND

AUGUST 1956

NBS 490

N. A. INTERNATIONAL PHYSICAL SYMPOSIUM 23-27

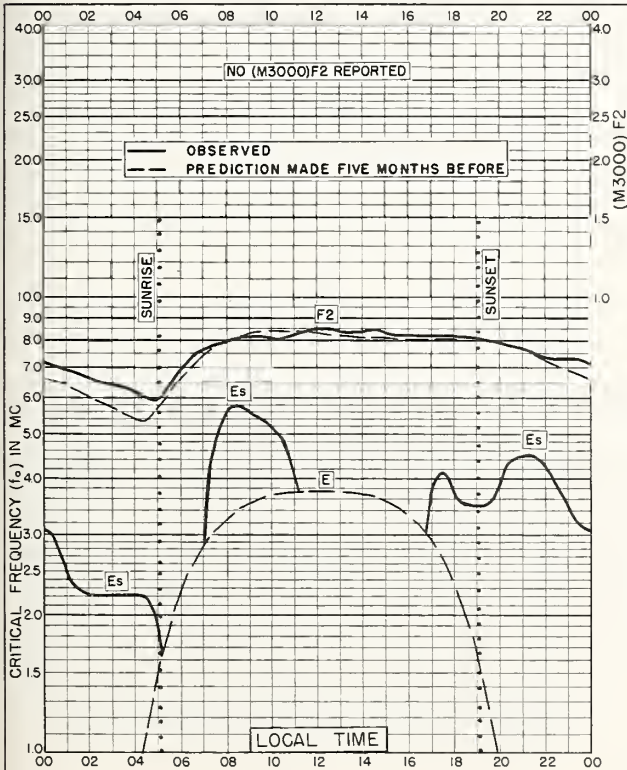


Fig. 51. WAKKANAI, JAPAN  
45.4°N, 141.7°E

AUGUST 1956

NBS 503

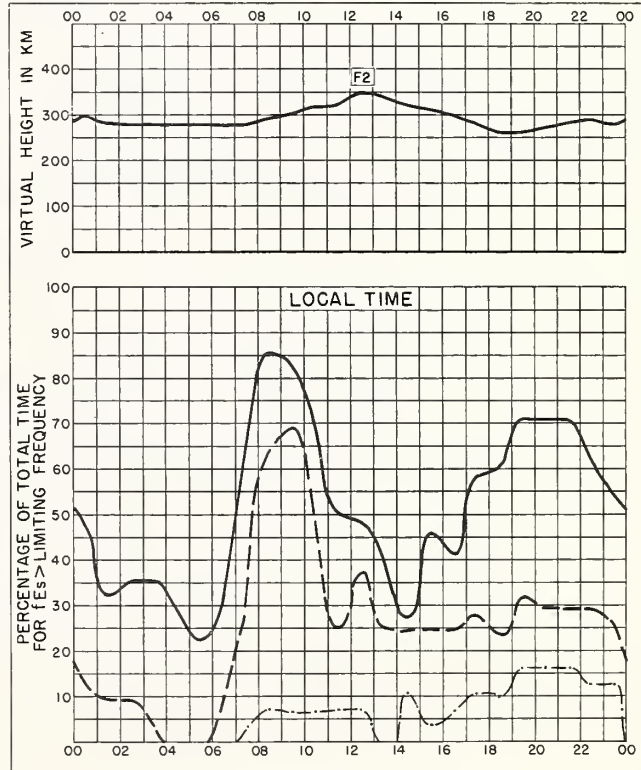


Fig. 52. WAKKANAI, JAPAN

AUGUST 1956

NBS 490

N. A. INTERNATIONAL PHYSICAL SYMPOSIUM 23-27

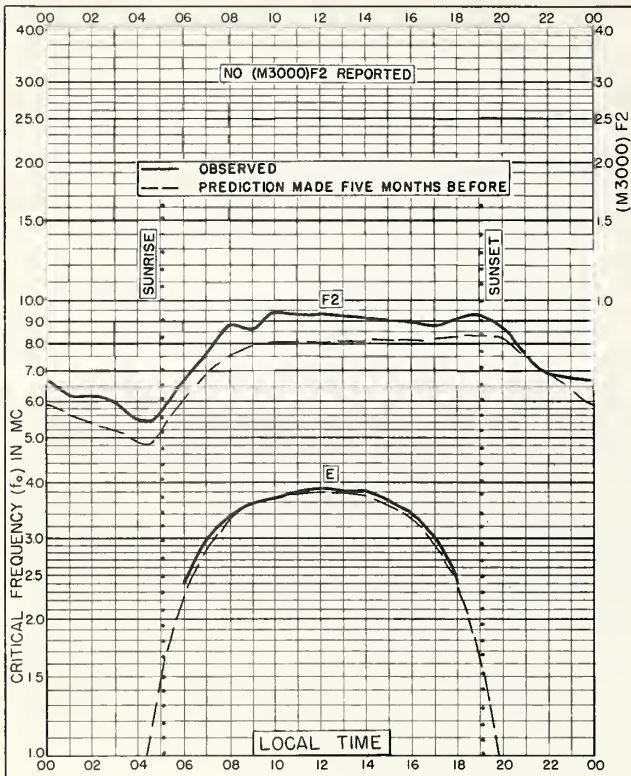


Fig. 53. MONTE CAPELLINO, ITALY  
44.6°N, 9.0°E  
AUGUST 1956

NBS 503

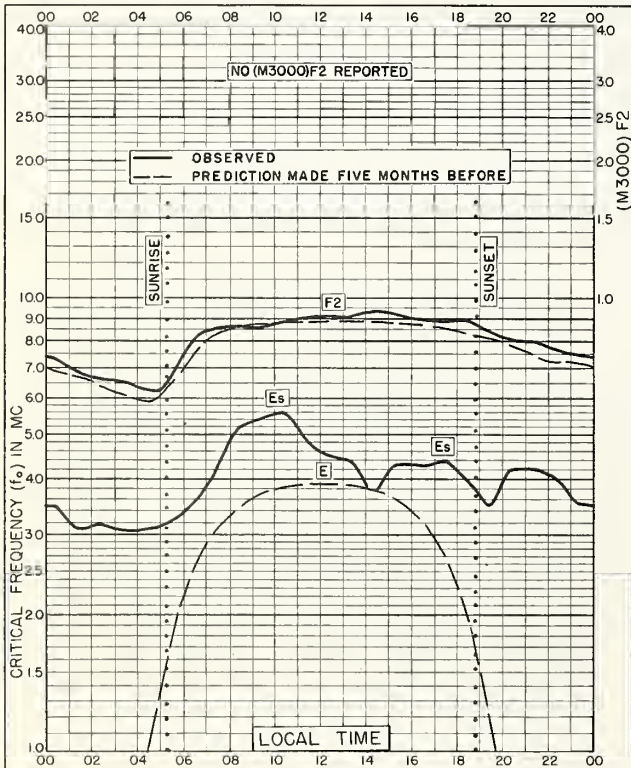


Fig. 54. AKITA, JAPAN  
39.7°N, 140.1°E  
AUGUST 1956

NBS 503

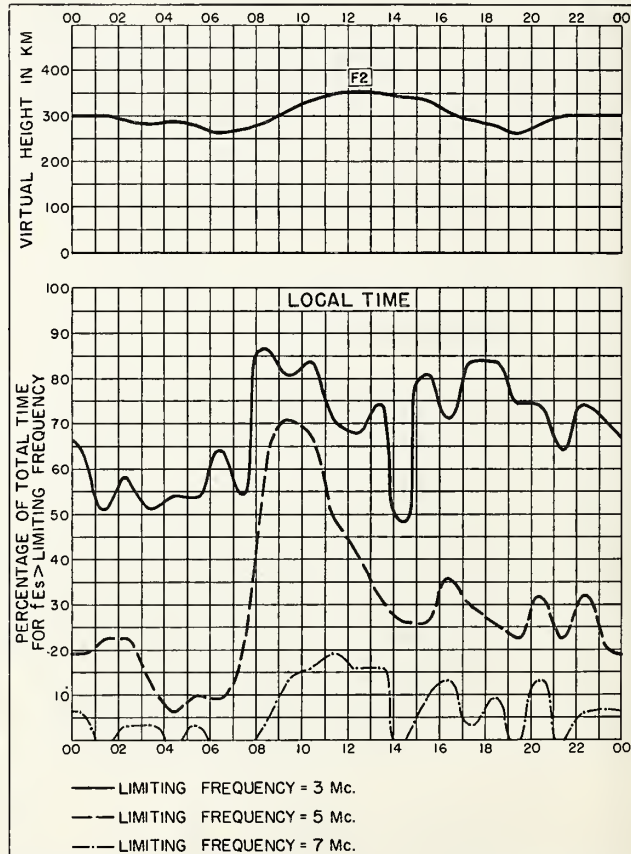


Fig. 55. AKITA, JAPAN  
AUGUST 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 228877



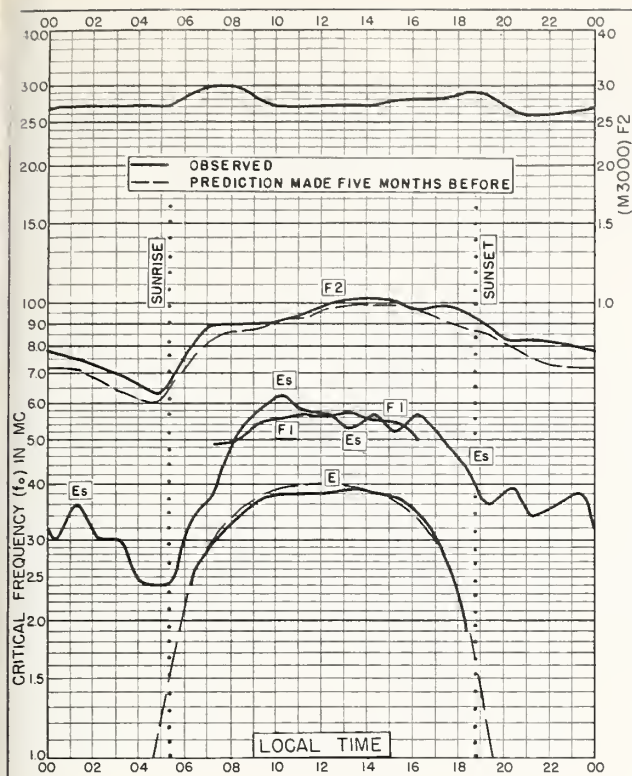


Fig. 56. TOKYO, JAPAN  
35.7°N, 139.5°E

AUGUST 1956

NBS 503

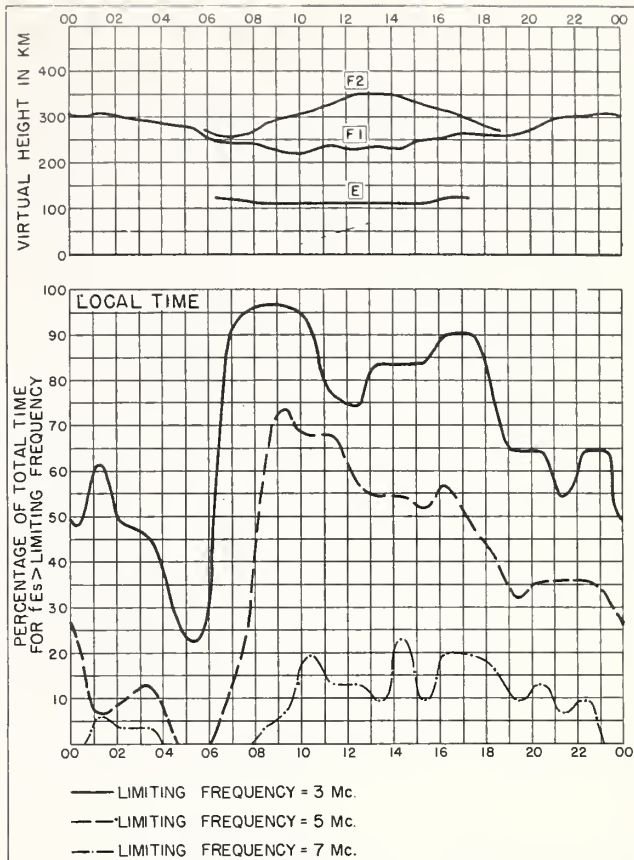


Fig. 57. TOKYO, JAPAN

AUGUST 1956

NBS 490

NBS 503

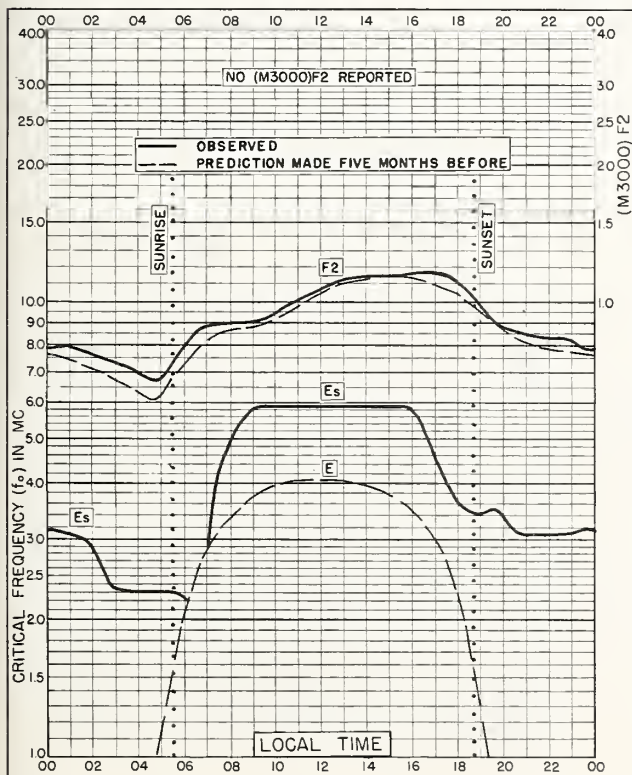


Fig. 58. YAMAGAWA, JAPAN  
31.2°N, 130.6°E

AUGUST 1956

NBS 503

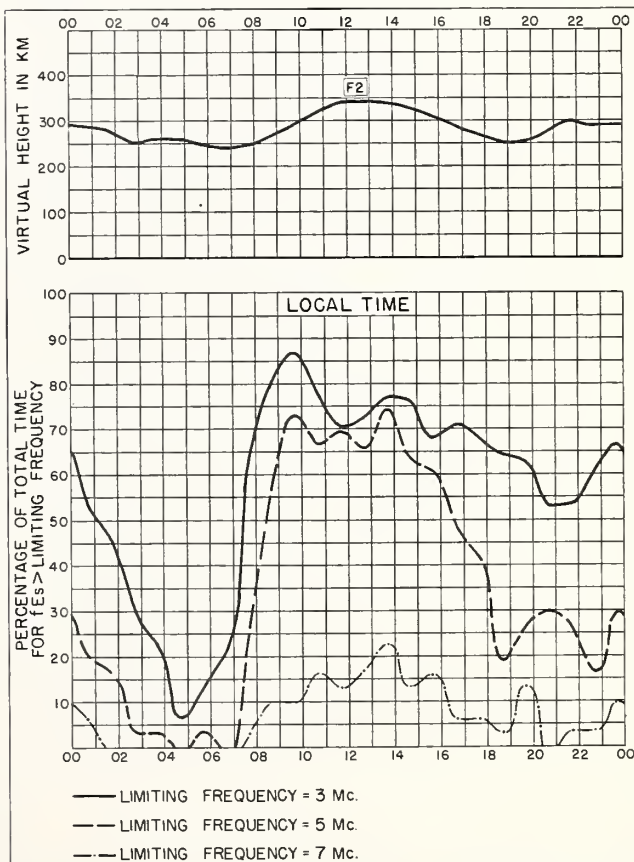


Fig. 59. YAMAGAWA, JAPAN

AUGUST 1956

NBS 490

NBS 503

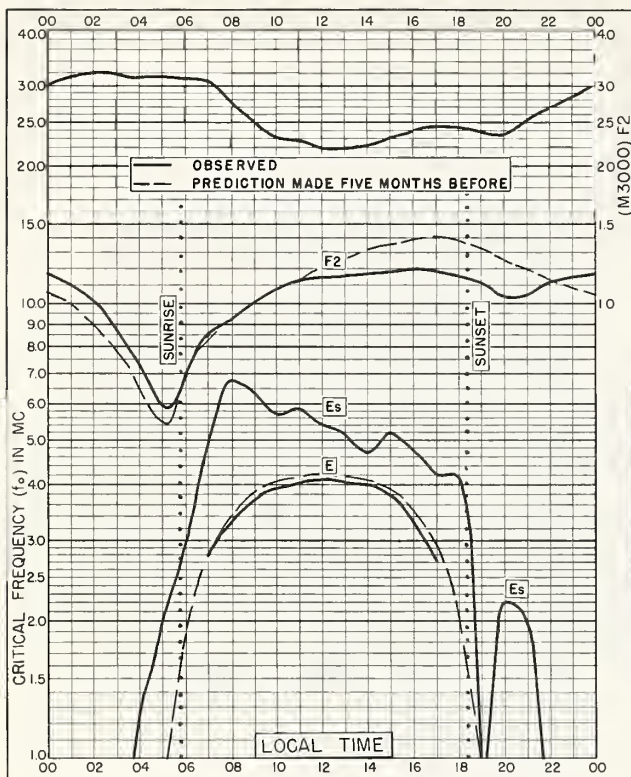


Fig. 60. BAGUIO, P. I.  
16.4°N, 120.6°E

AUGUST 1956

NBS 503

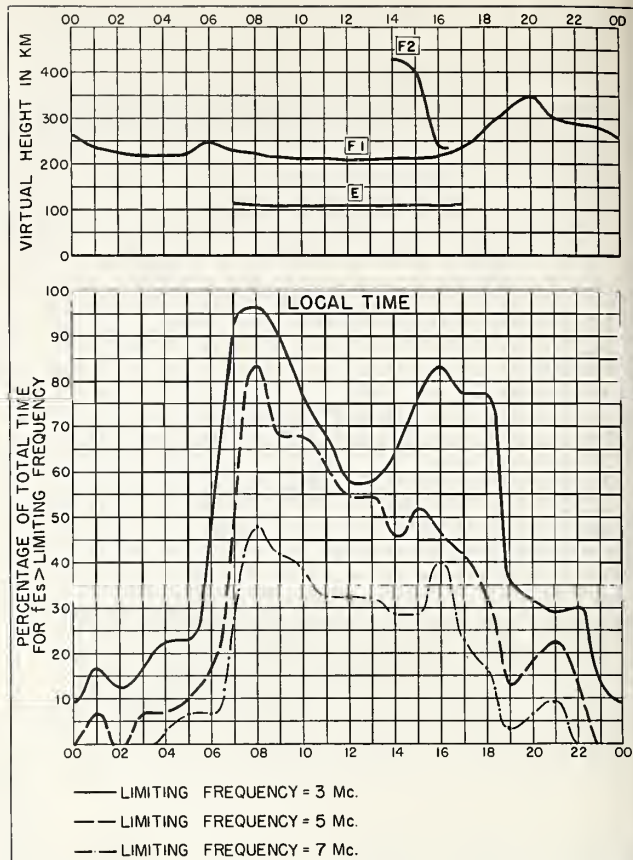


Fig. 61. BAGUIO, P. I.

AUGUST 1956

NBS 490

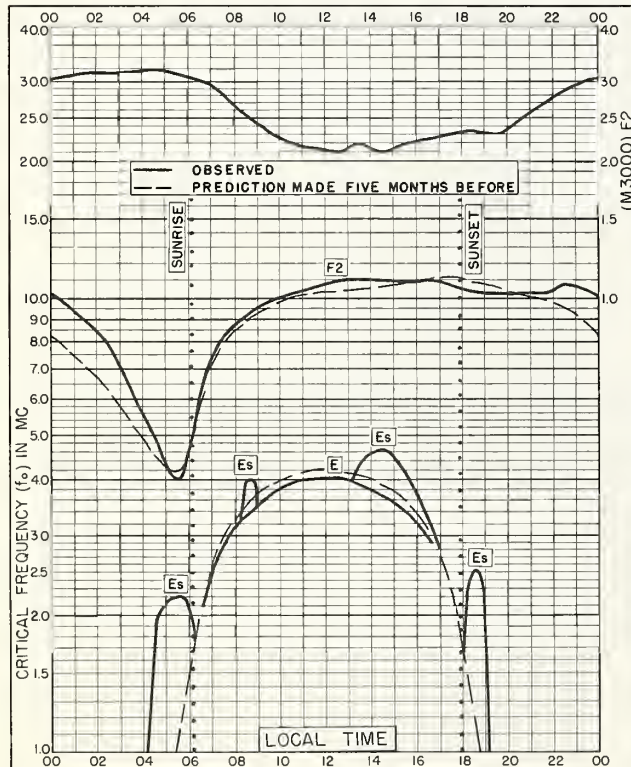


Fig. 62. TALARA, PERU  
4.6°S, 81.3°W

AUGUST 1956

NBS 503

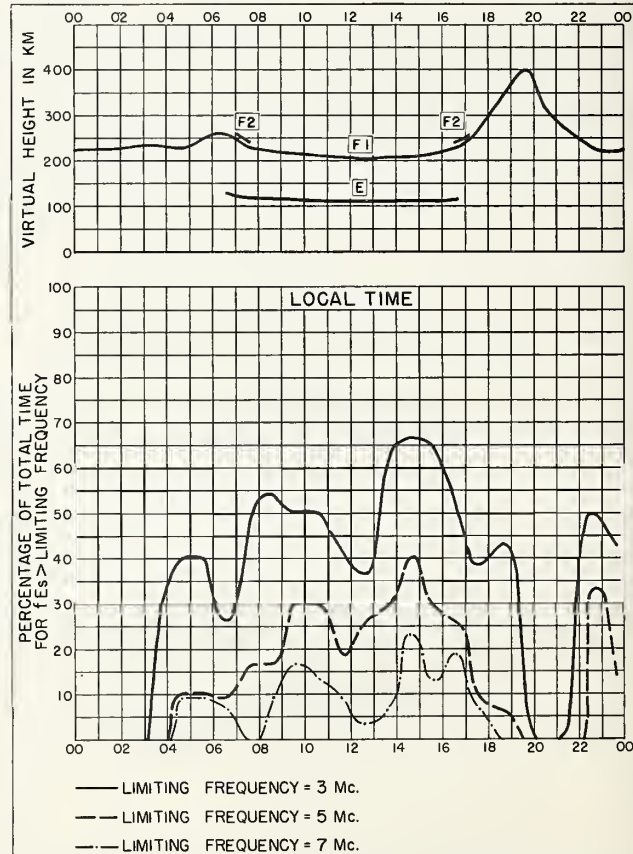


Fig. 63. TALARA, PERU

AUGUST 1956

NBS 490

NBS 490



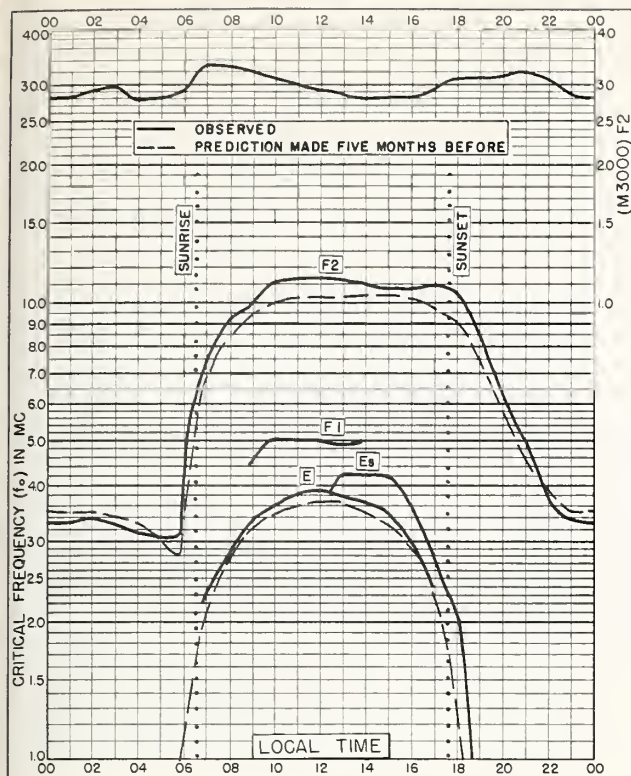


Fig. 64. JOHANNESBURG, UNION OF S. AFRICA  
26.2°S, 28.1°E  
AUGUST 1956

NBS 503

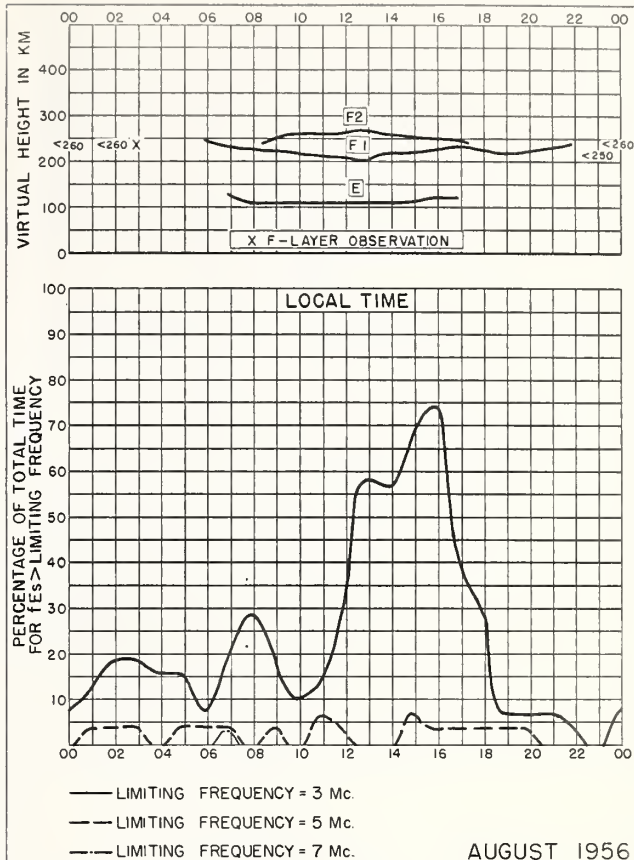


Fig. 65. JOHANNESBURG, UNION OF S. AFRICA  
AUGUST 1956

NBS 490

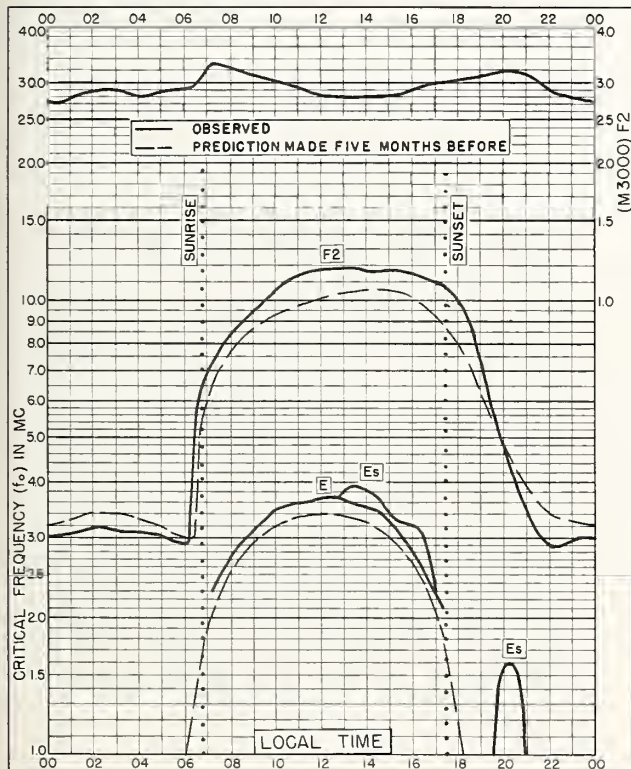


Fig. 66. CAPETOWN, UNION OF S. AFRICA  
34.2°S, 18.3°E  
AUGUST 1956

NBS 503

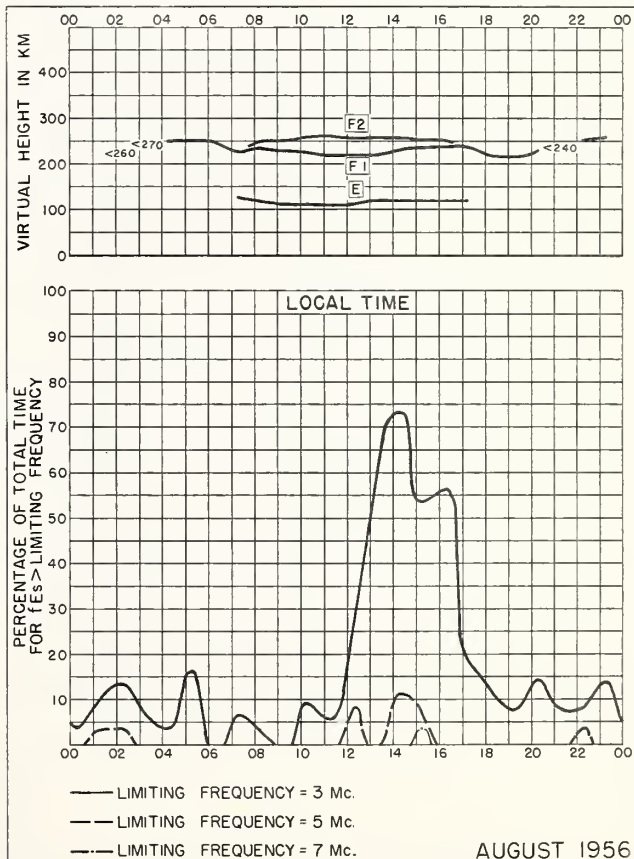


Fig. 67. CAPETOWN, UNION OF S. AFRICA  
AUGUST 1956

NBS 490

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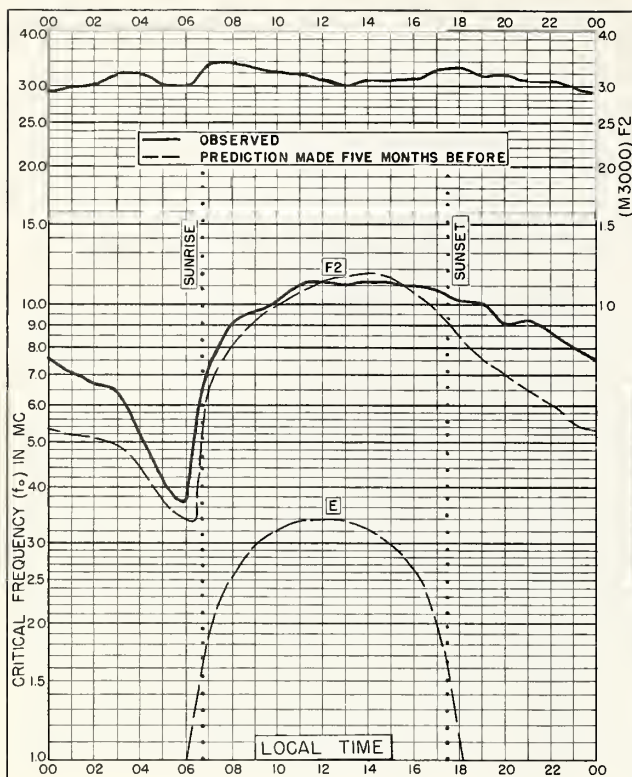


Fig. 68. BUENOS AIRES, ARGENTINA  
34.5°S, 58.5°W AUGUST 1956

NBS 503

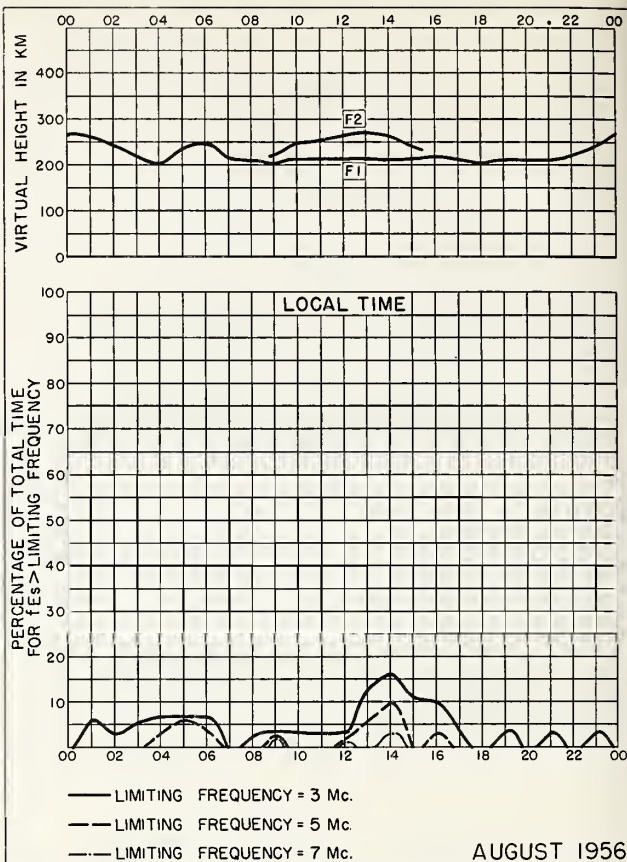


Fig. 69. BUENOS AIRES, ARGENTINA

AUGUST 1956

NBS 490

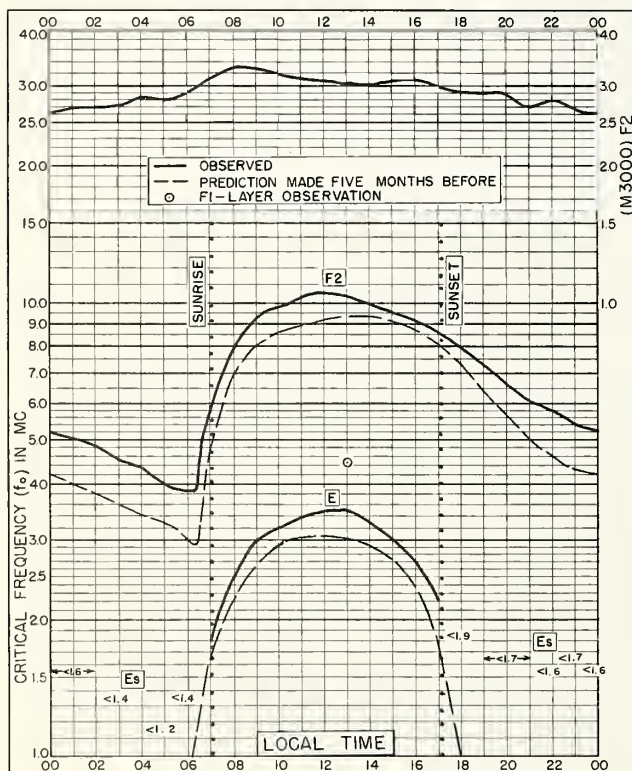


Fig. 70. CHRISTCHURCH, NEW ZEALAND  
43.6°S, 172.8°E AUGUST 1956

NBS 503

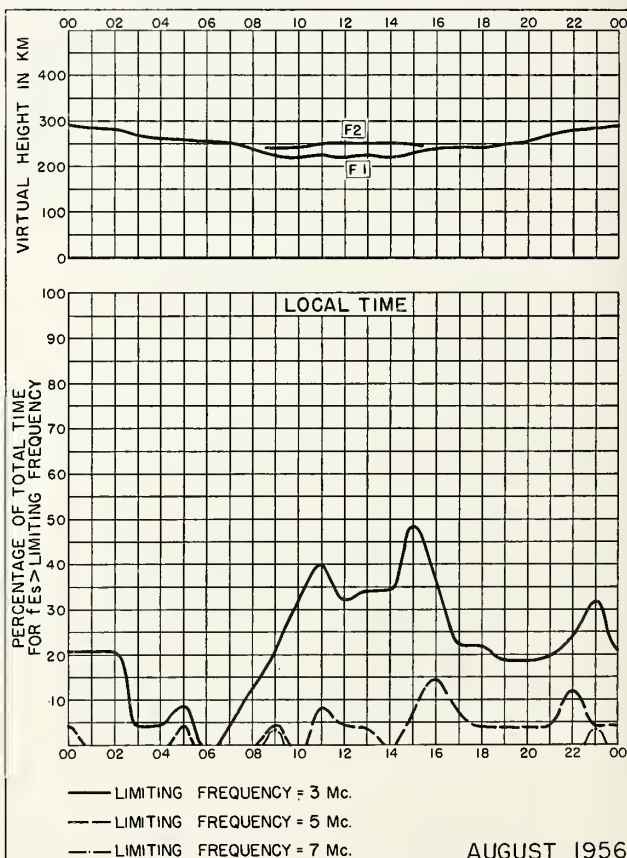


Fig. 71. CHRISTCHURCH, NEW ZEALAND

AUGUST 1956

NBS 490



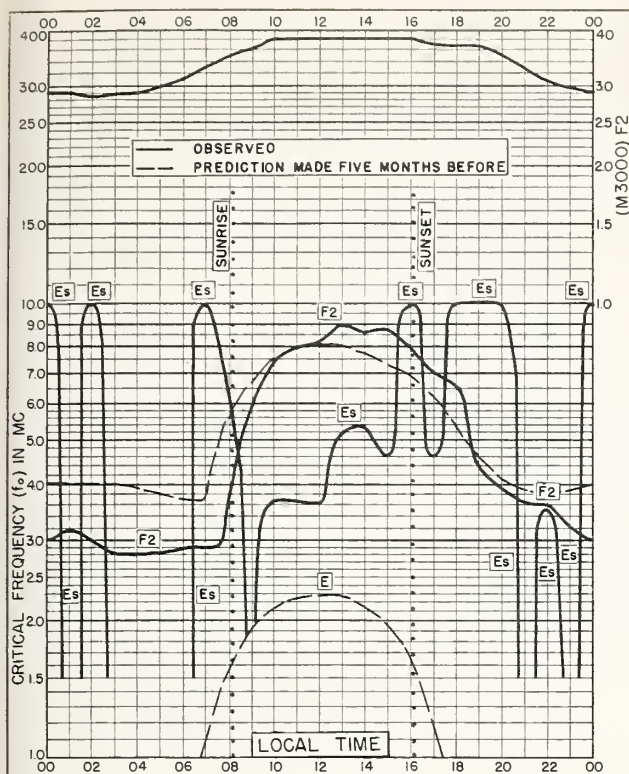


Fig. 72. DECEPCION I.  
63.0°S, 60.7°W

AUGUST 1956

NBS 503

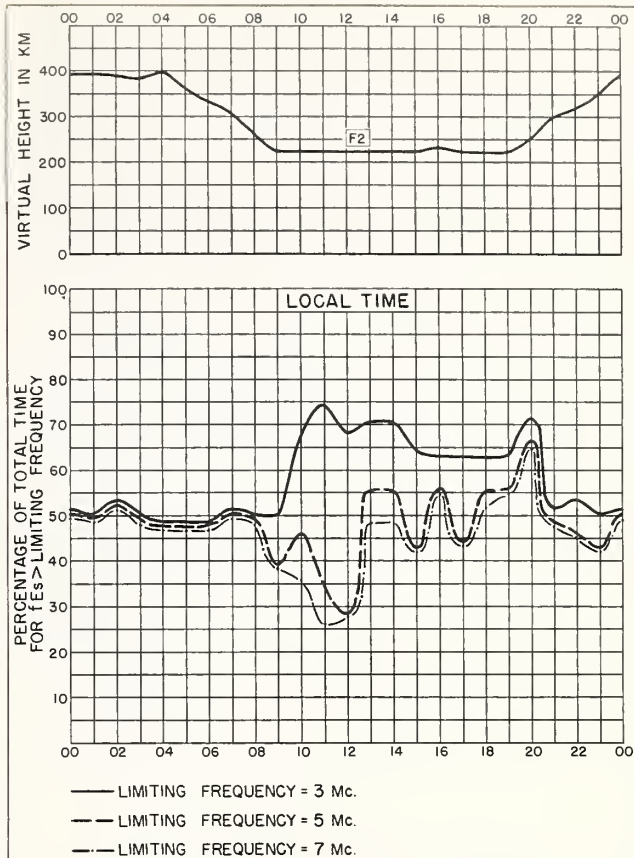


Fig. 73. DECEPCION I.

AUGUST 1956

NBS 490

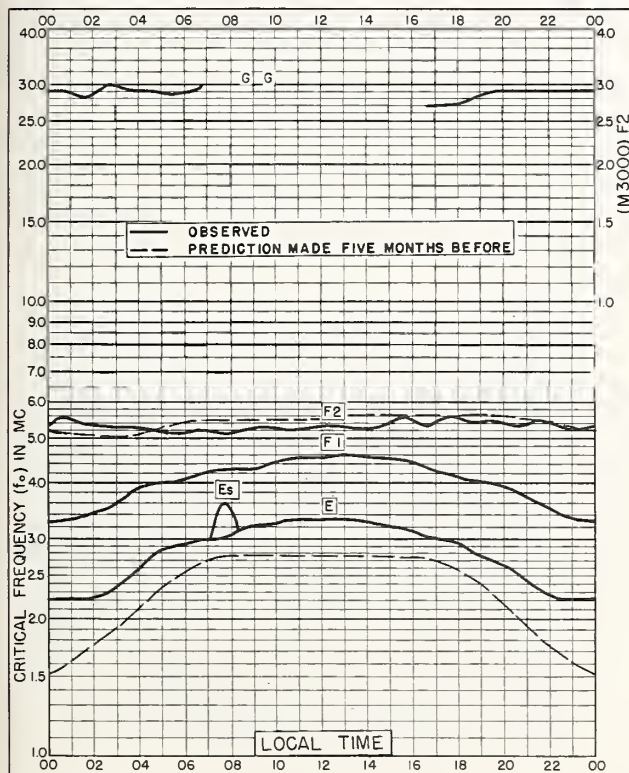


Fig. 74. RESOLUTE BAY, CANADA  
74.7°N, 94.9°W

JULY 1956

NBS 503

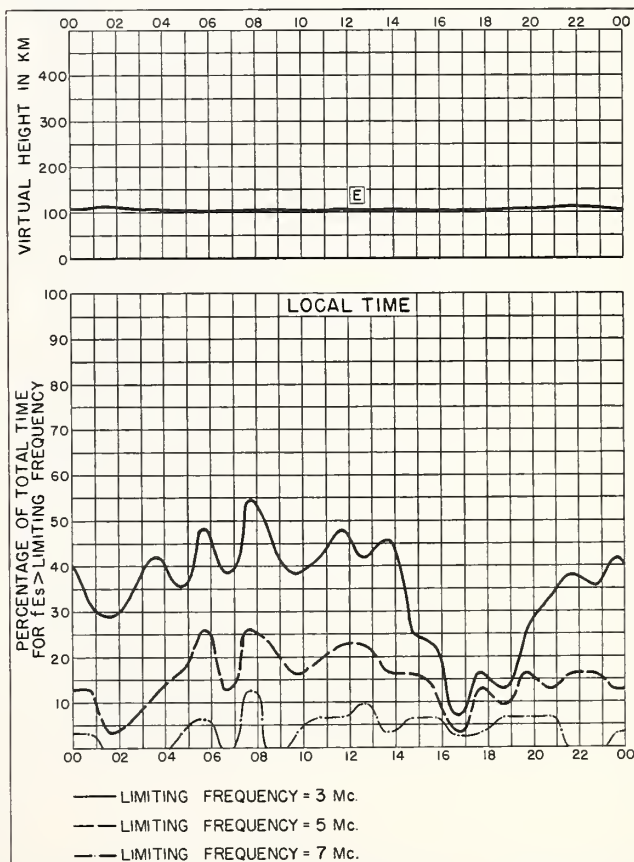


Fig. 75. RESOLUTE BAY, CANADA

JULY 1956

NBS 490

N. A. INTERNATIONAL RESEARCH SERVICE 11/5777



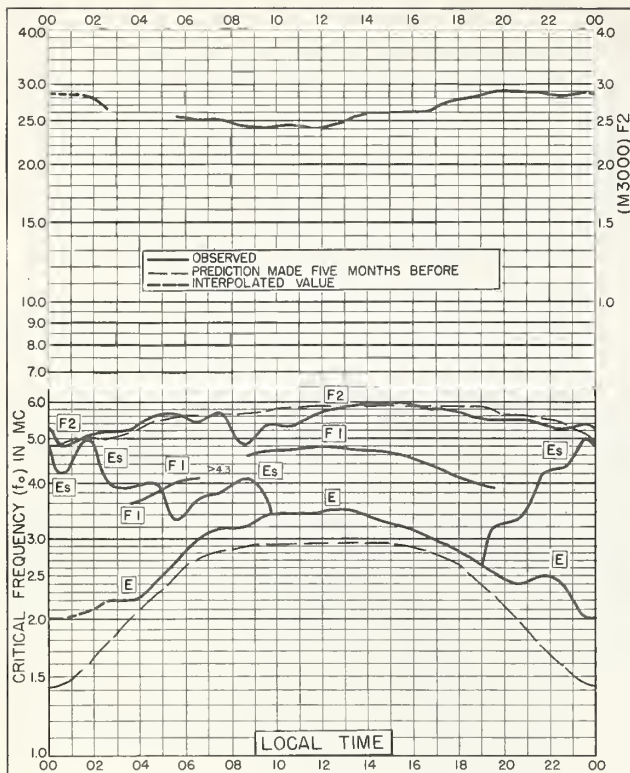


Fig. 76. POINT BARROW, ALASKA  
71.3°N, 156.8°W

JULY 1956

NBS 503

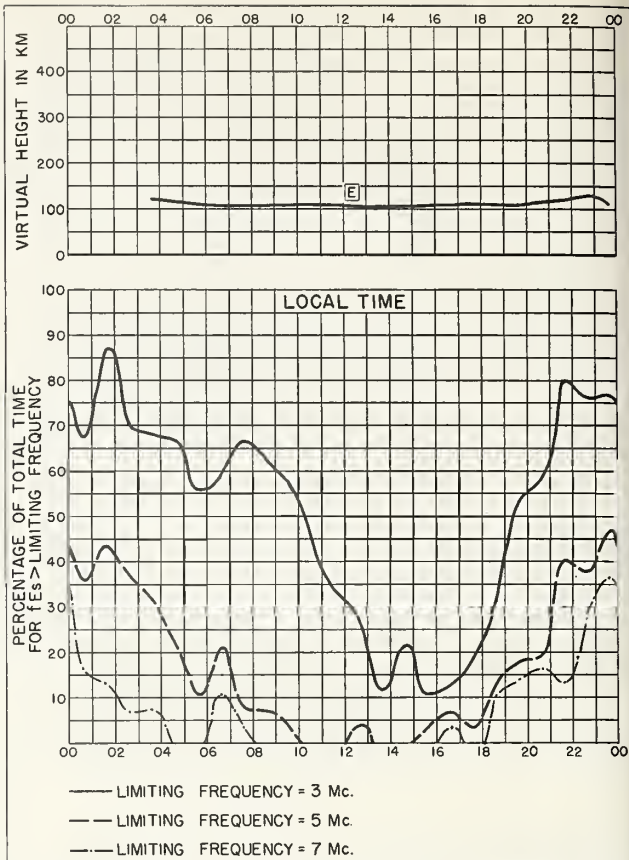


Fig. 77. POINT BARROW, ALASKA

JULY 1956

NBS 490

N. S. INTERNATIONAL POSITION OFFICE 51207

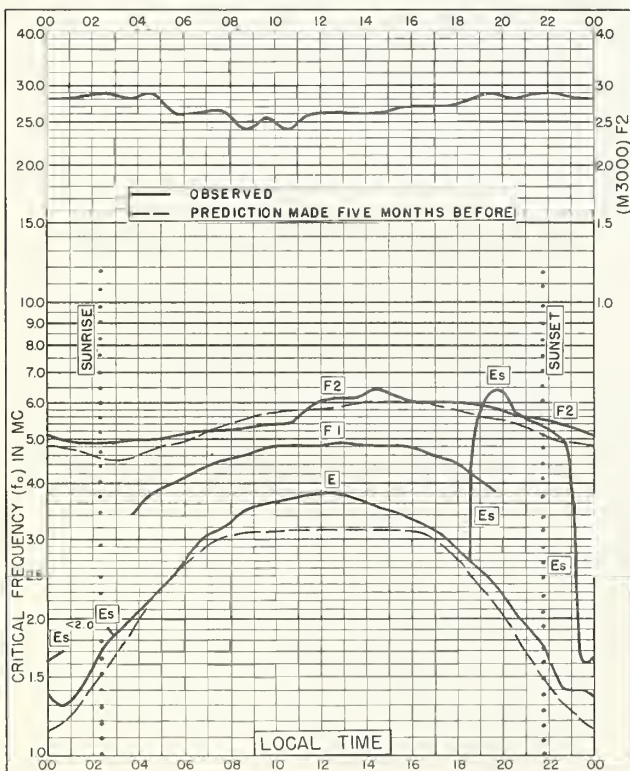


Fig. 78. BAKER LAKE, CANADA  
64.3°N, 96.0°W

JULY 1956

NBS 503

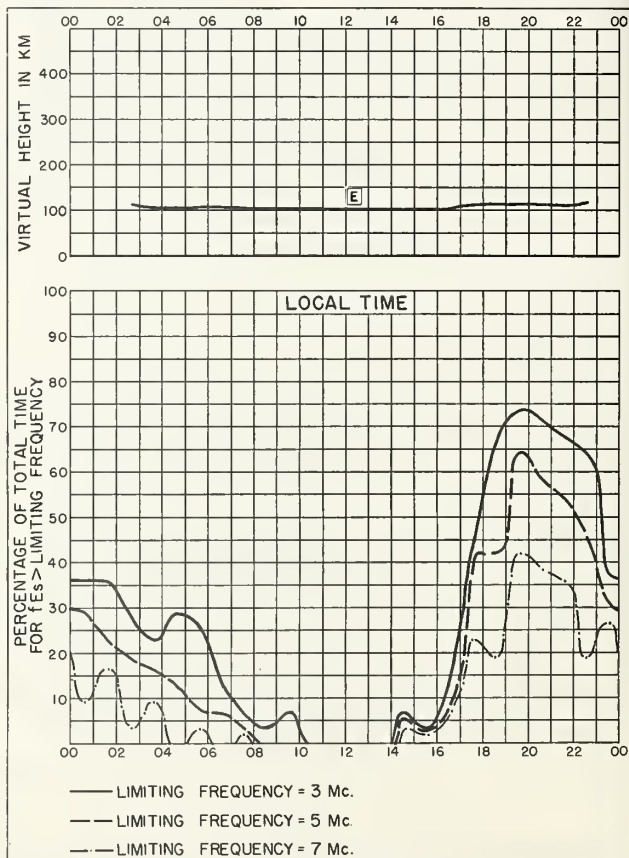


Fig. 79. BAKER LAKE, CANADA

JULY 1956

NBS 490

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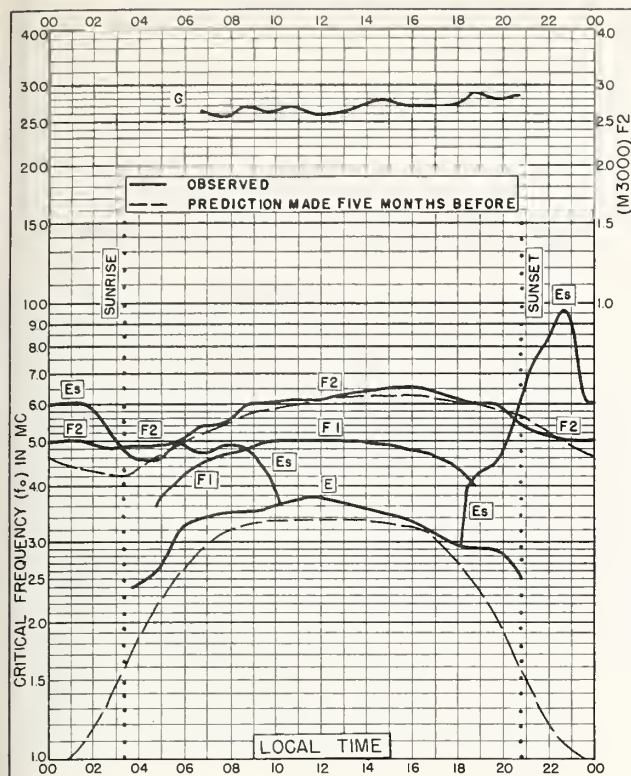


Fig. 80. CHURCHILL, CANADA  
58.8°N, 94.2°W

JULY 1956

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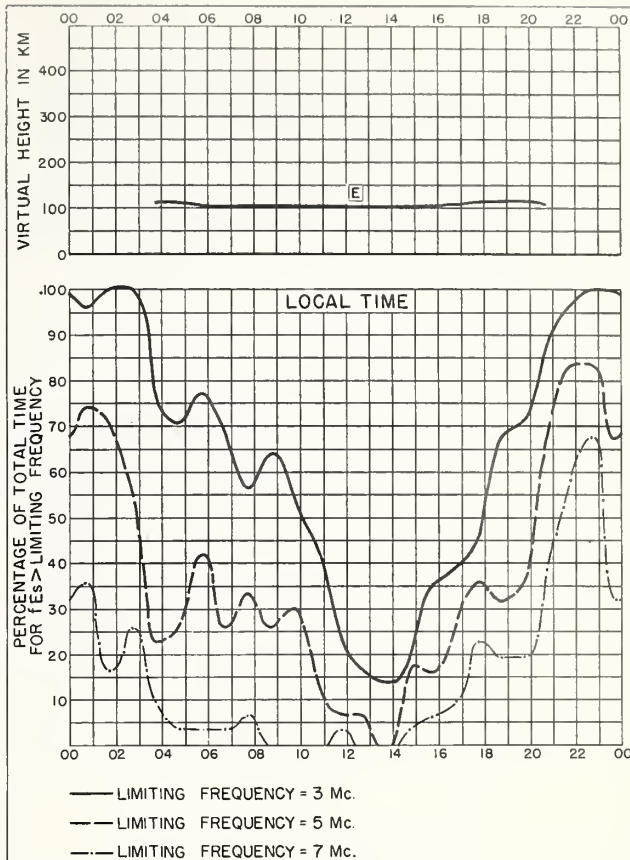


Fig. 81. CHURCHILL, CANADA

JULY 1956

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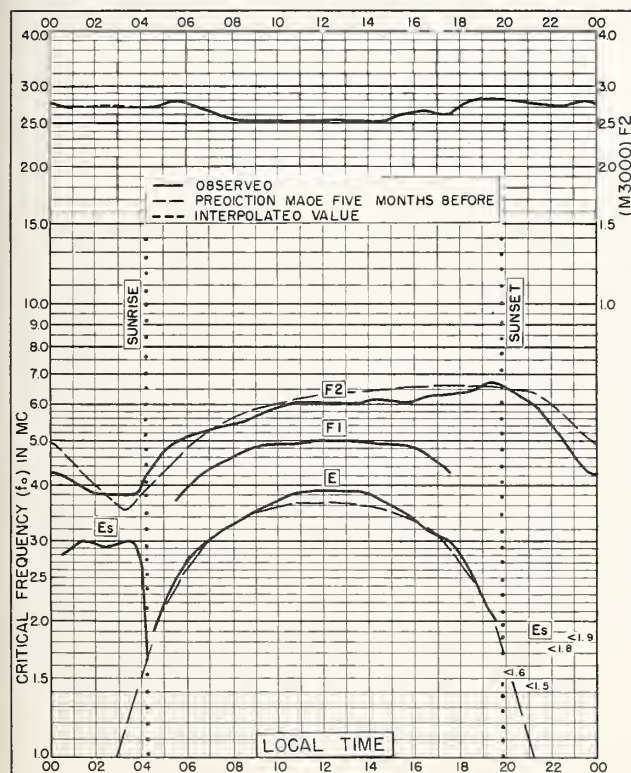


Fig. 82. WINNIPEG, CANADA  
49.9°N, 97.4°W

JULY 1956

NBS 503

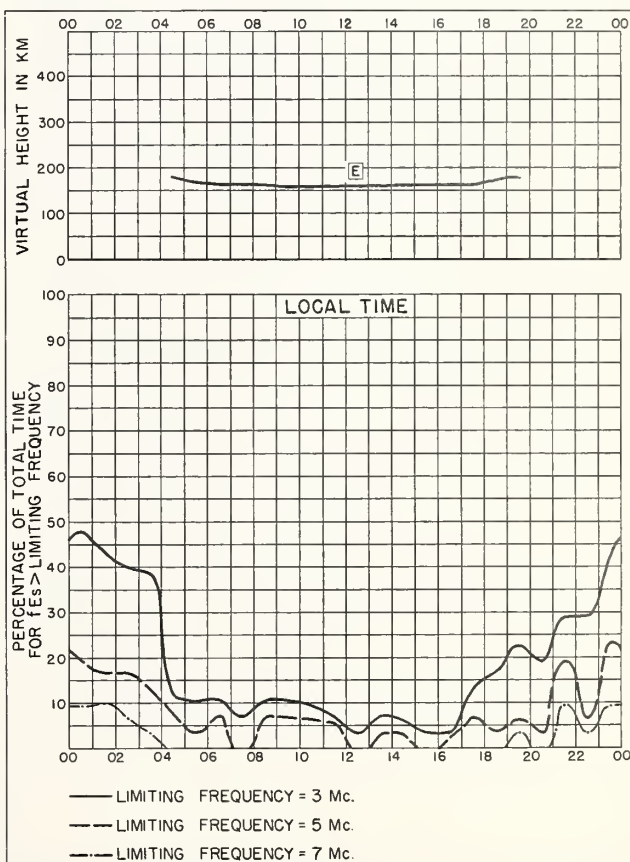


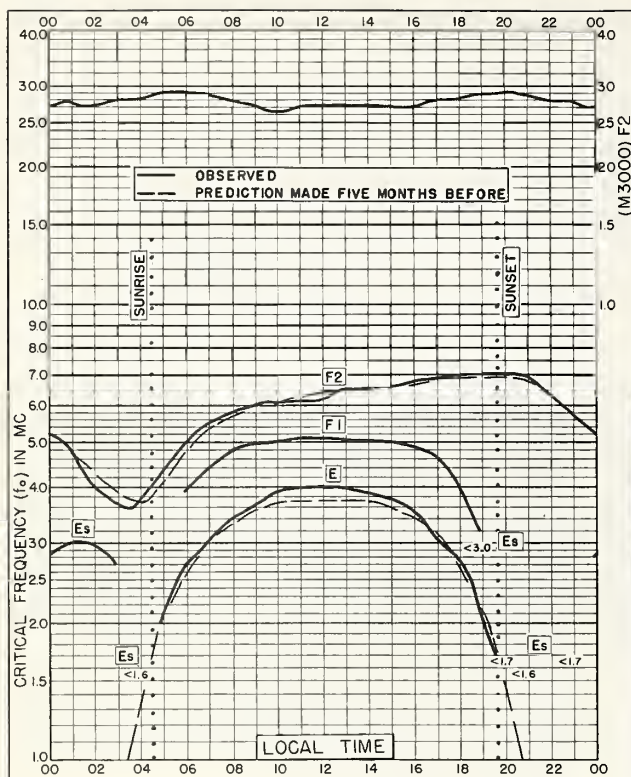
Fig. 83. WINNIPEG, CANADA

JULY 1956

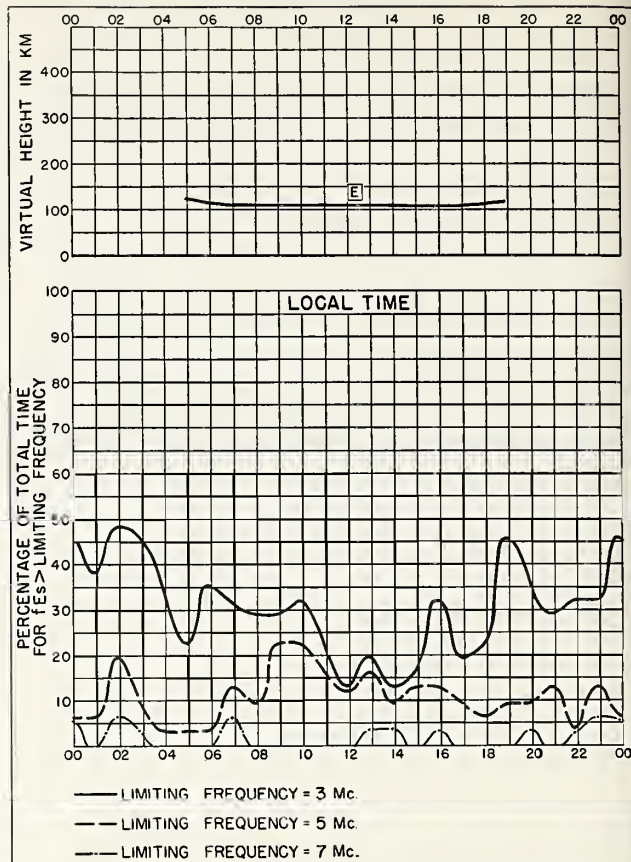
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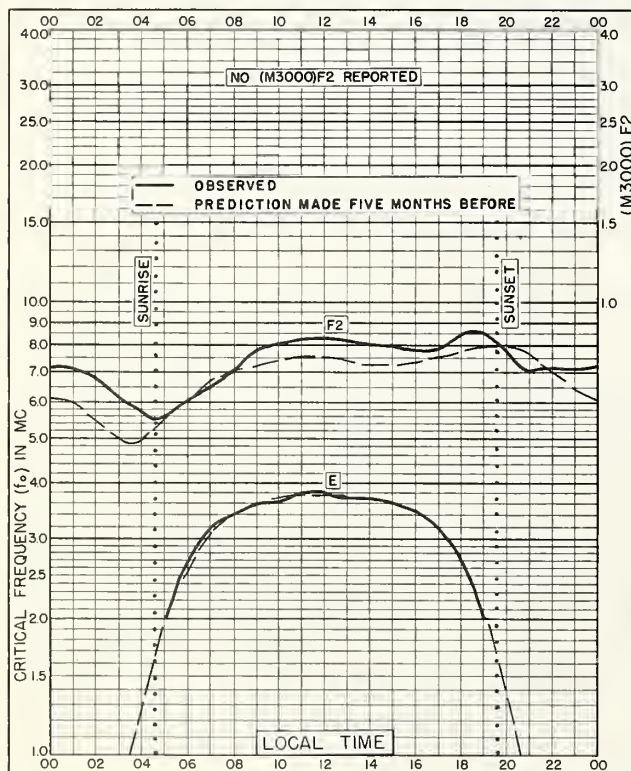




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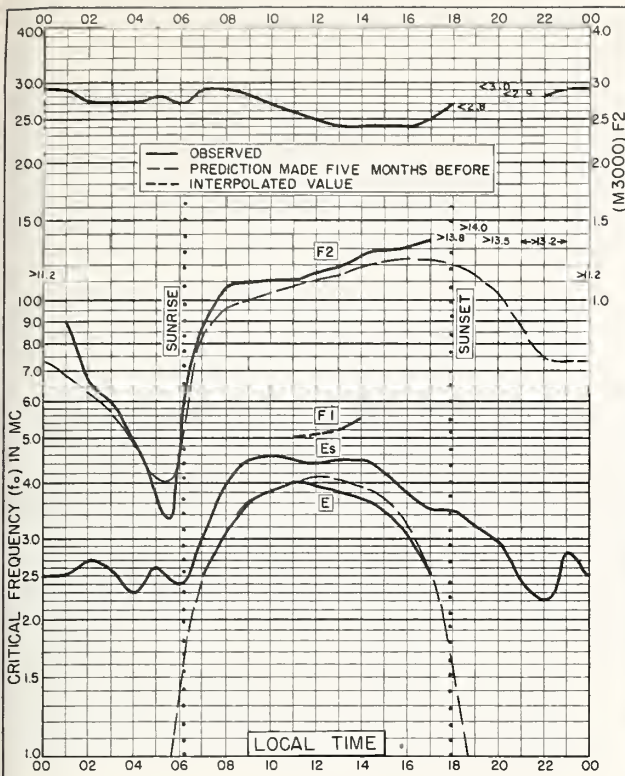


Fig. 87. LEOPOLDVILLE, BELGIAN CONGO  
4.4°S, 15.2°E  
JULY 1956

NBS 503

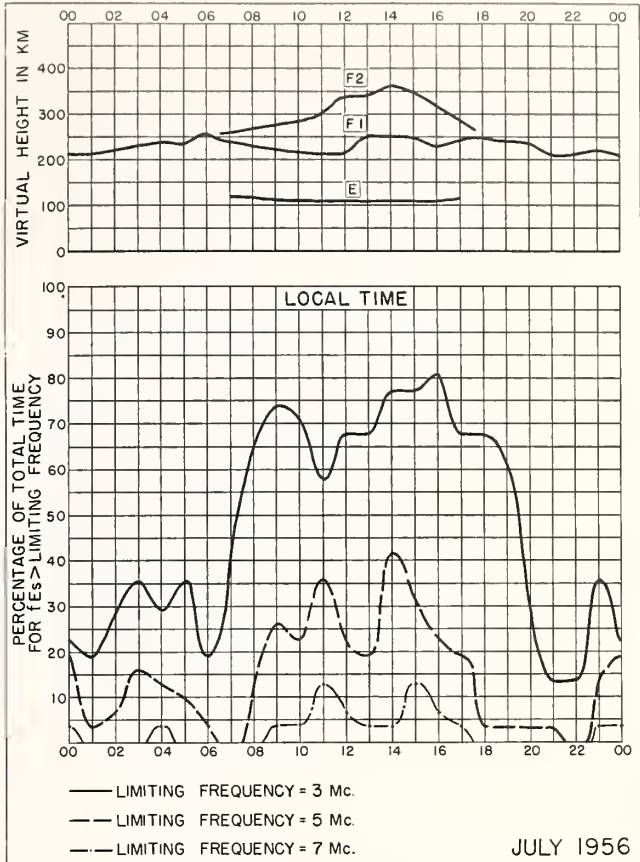


Fig. 88. LEOPOLDVILLE, BELGIAN CONGO

JULY 1956

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NBS 503

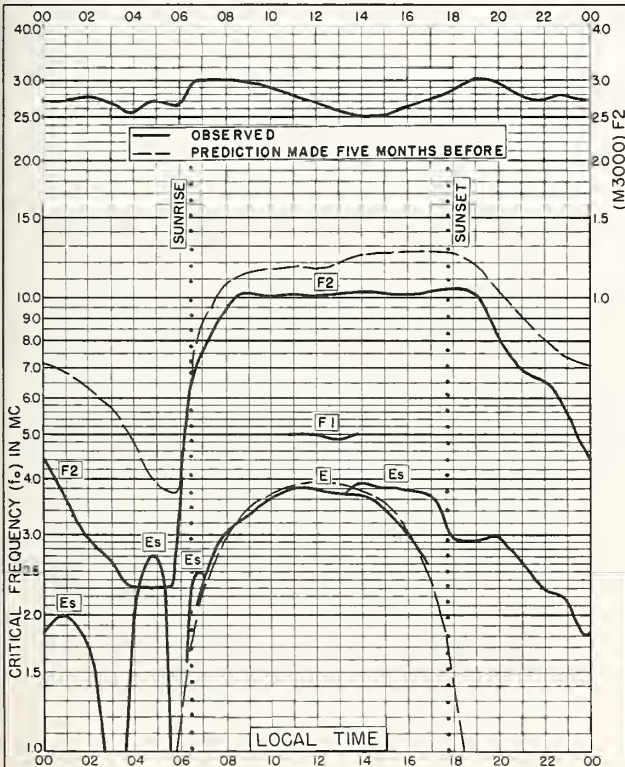


Fig. 89. ELISABETHVILLE, BELGIAN CONGO  
11.6°S, 27.5°E  
JULY 1956

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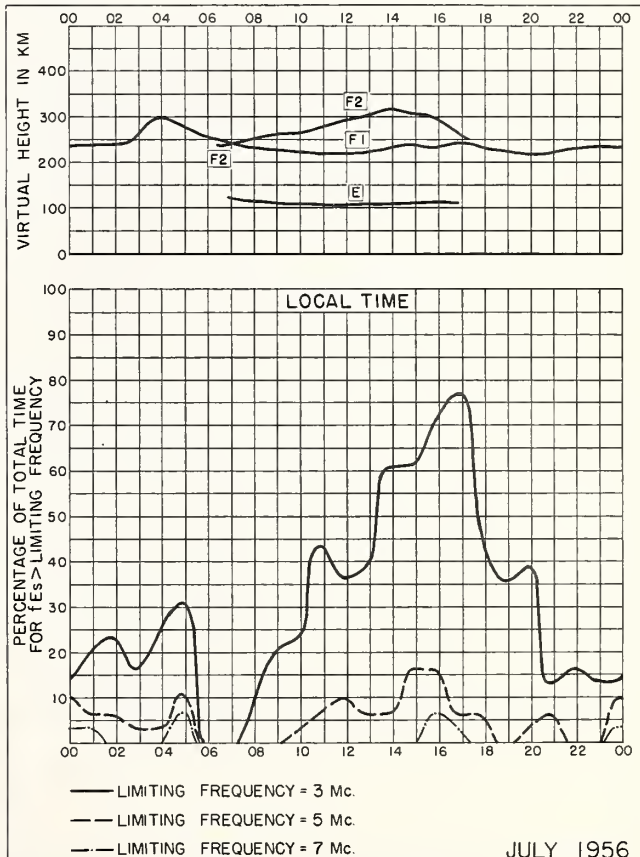


Fig. 90. ELISABETHVILLE, BELGIAN CONGO

JULY 1956

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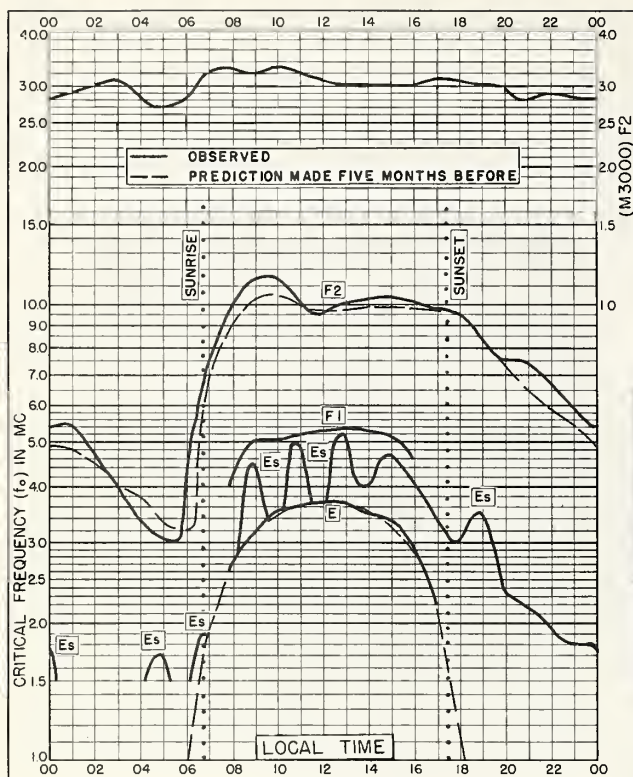


Fig. 91. RAROTONGA I.  
21.3°S, 159.8°W

JULY 1956

NBS 503

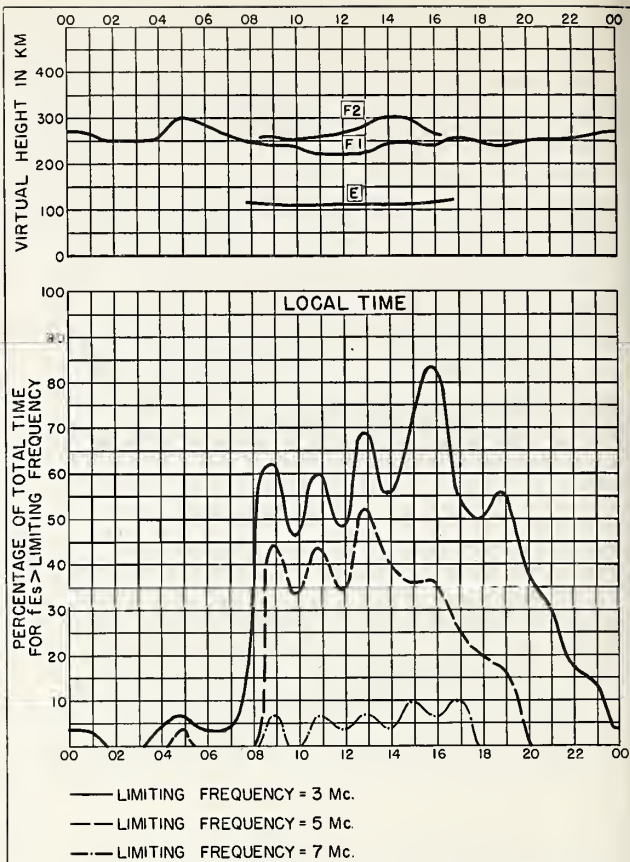


Fig. 92. RAROTONGA I.

JULY 1956

NBS 490

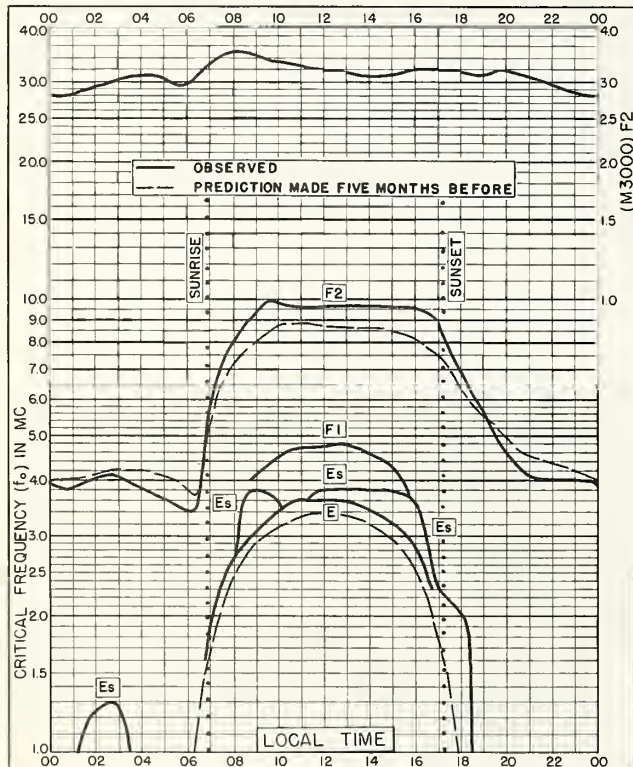


Fig. 93. WATHEROO, W. AUSTRALIA  
30.3°S, 115.9°E

JULY 1956

NBS 503

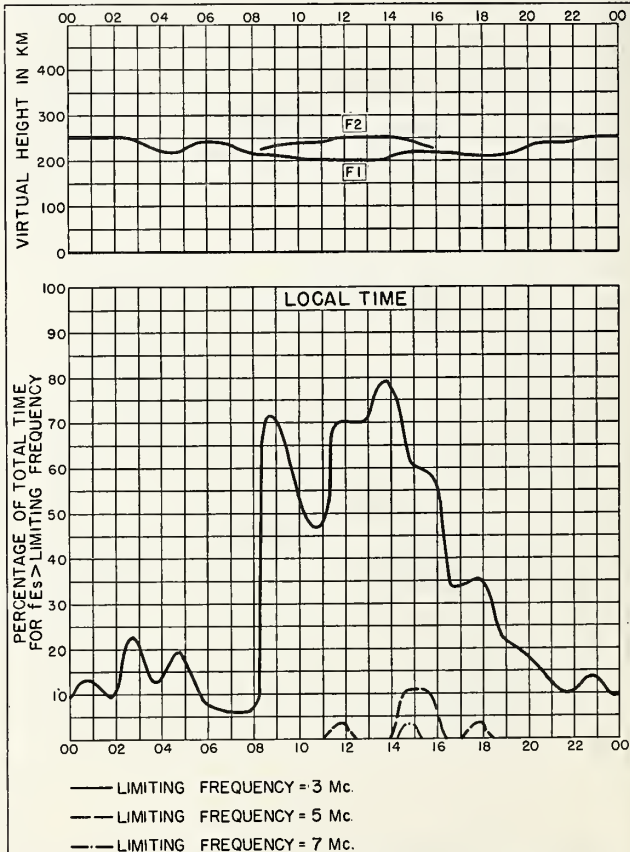


Fig. 94. WATHEROO, W. AUSTRALIA

JULY 1956

NBS 490



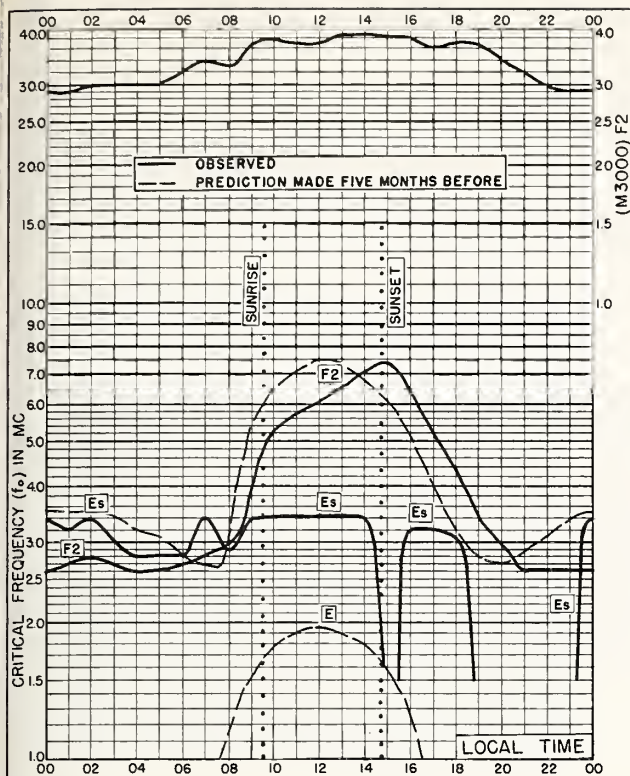


Fig. 95. DECEPCION I.  
63.0°S, 60.7°W

JULY 1956

NBS 503

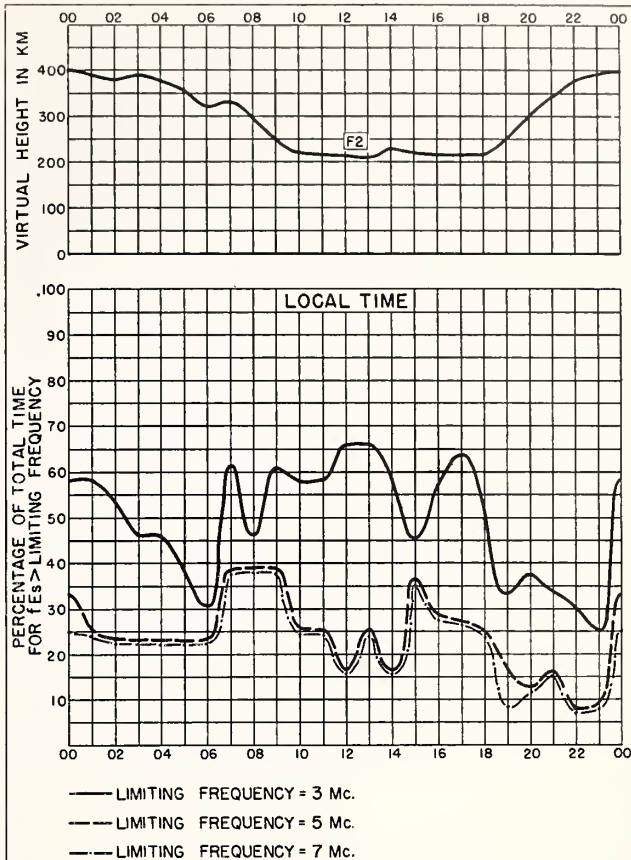


Fig. 96. DECEPCION I.

JULY 1956

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N. A. UNIVERSITY OF CALIFORNIA 11/20/77

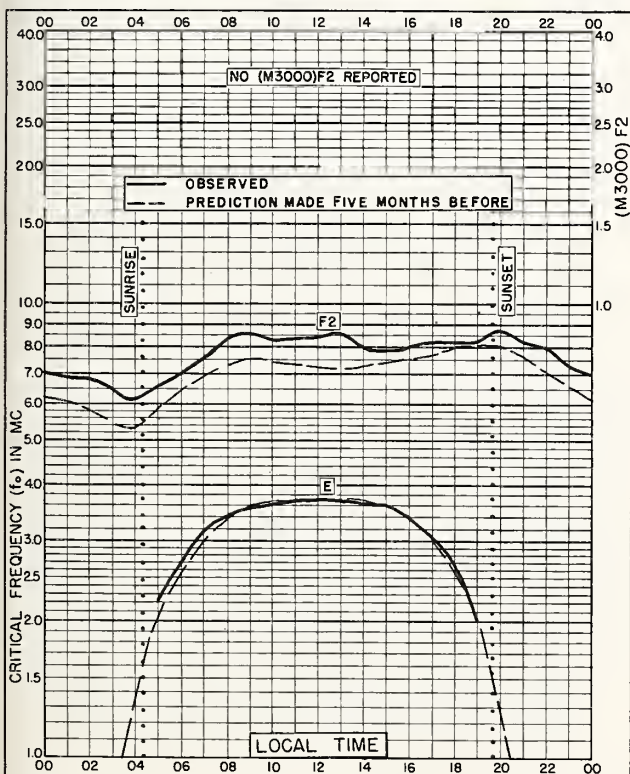


Fig. 97. MONTE CAPELLINO, ITALY  
44.6°N, 9.0°E

JUNE 1956

NBS 503



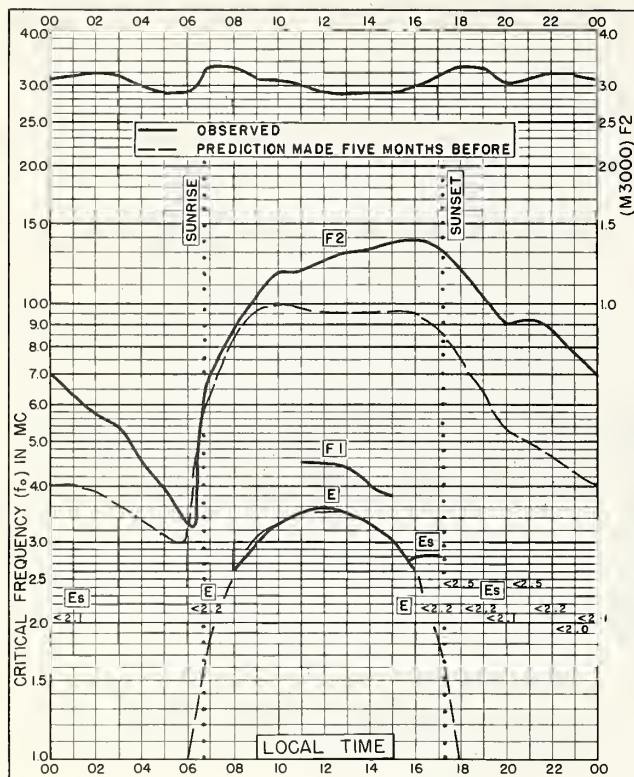


Fig. 98. SAO PAULO, BRAZIL  
23.5°S, 46.5°W

JUNE 1956

NBS 503

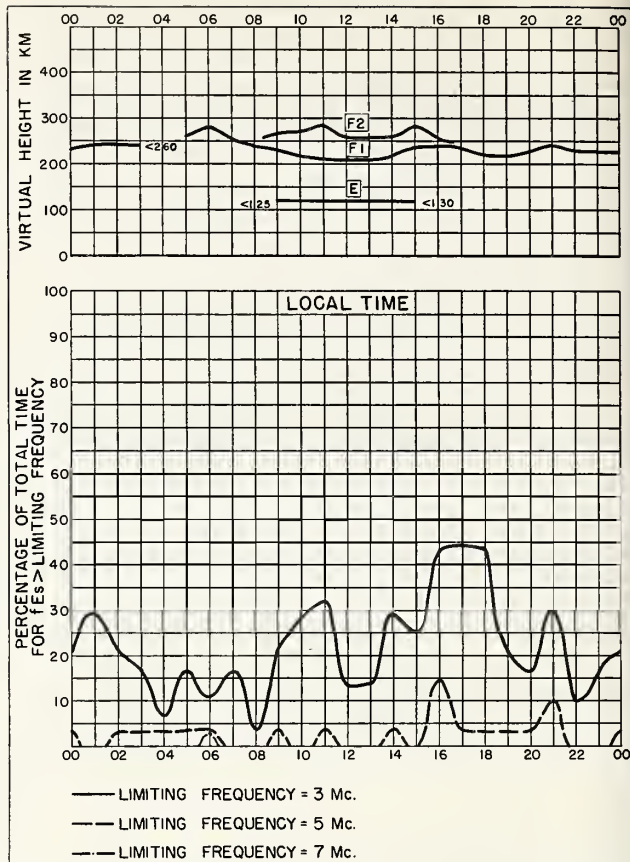


Fig. 99. SAO PAULO, BRAZIL

JUNE 1956

NBS 490

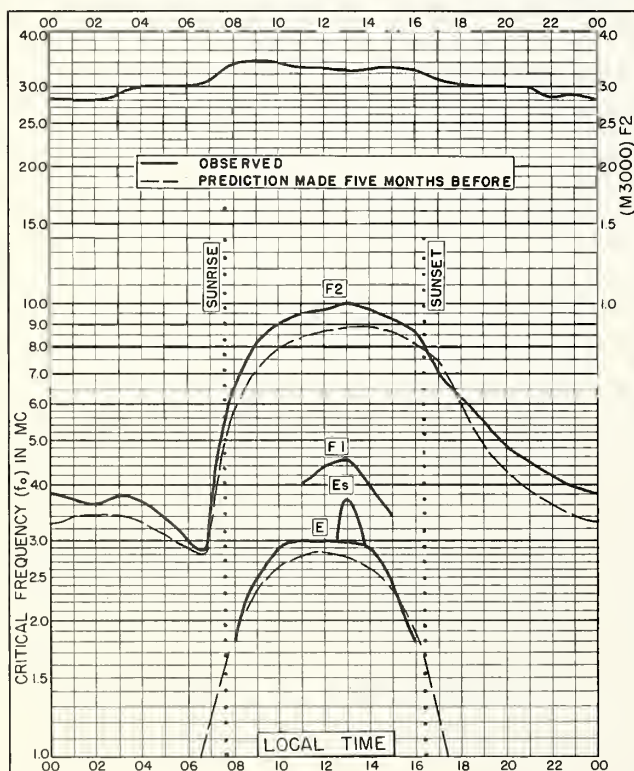


Fig. 100. CHRISTCHURCH, NEW ZEALAND  
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JUNE 1956

NBS 503

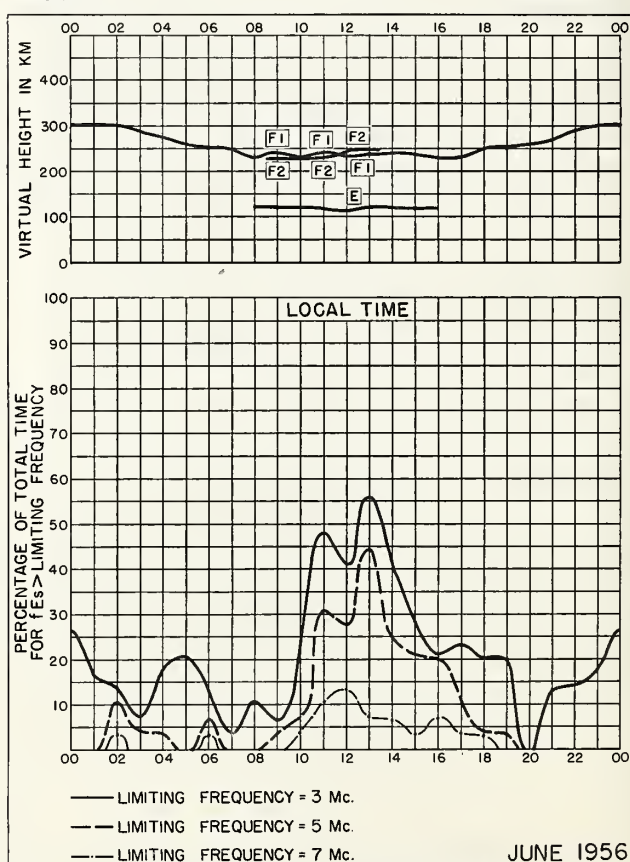


Fig. 101. CHRISTCHURCH, NEW ZEALAND

JUNE 1956

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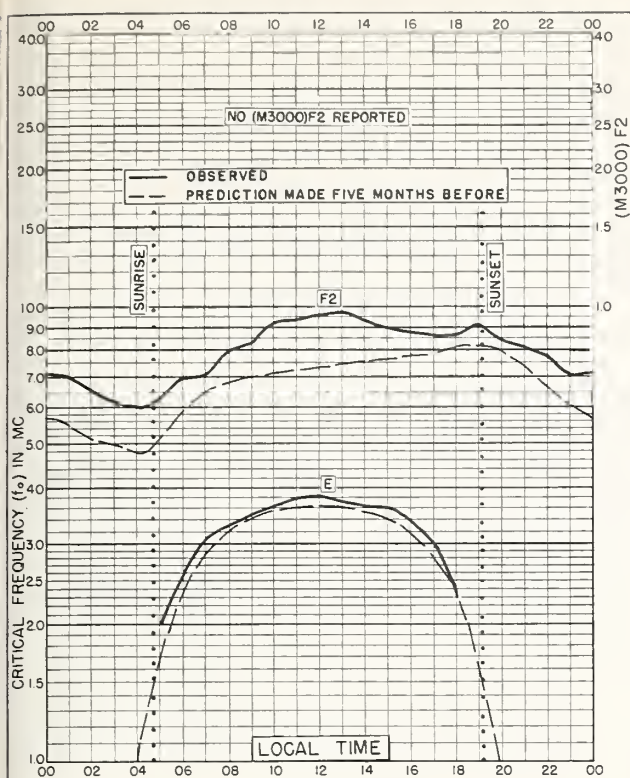


Fig. 102. MONTE CAPELLINO, ITALY  
44.6°N, 9.0°E MAY 1956

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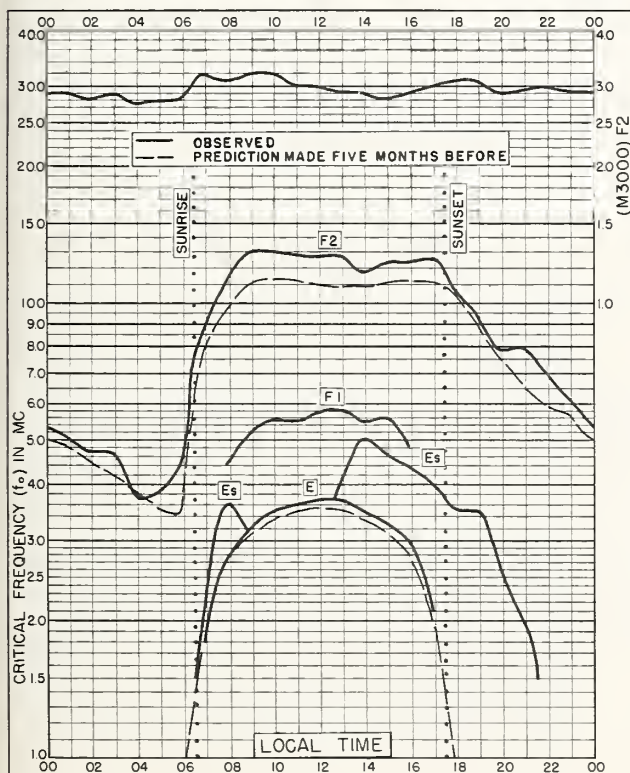


Fig. 103. RAROTONGA I.  
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NBS 503

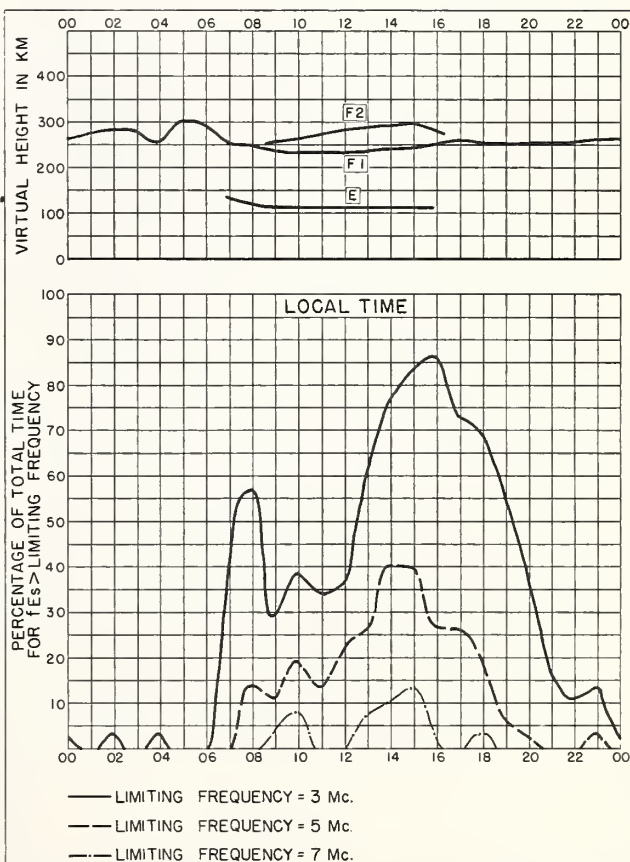


Fig. 104. RAROTONGA I.

MAY 1956

NBS 490

NBS 490



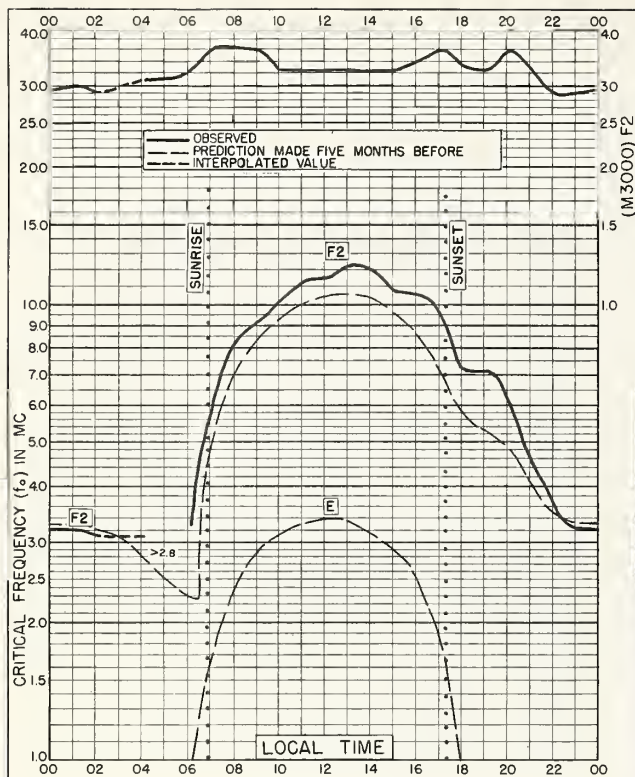


Fig. 105. DELHI, INDIA  
28.6°N, 77.1°E

JANUARY 1956

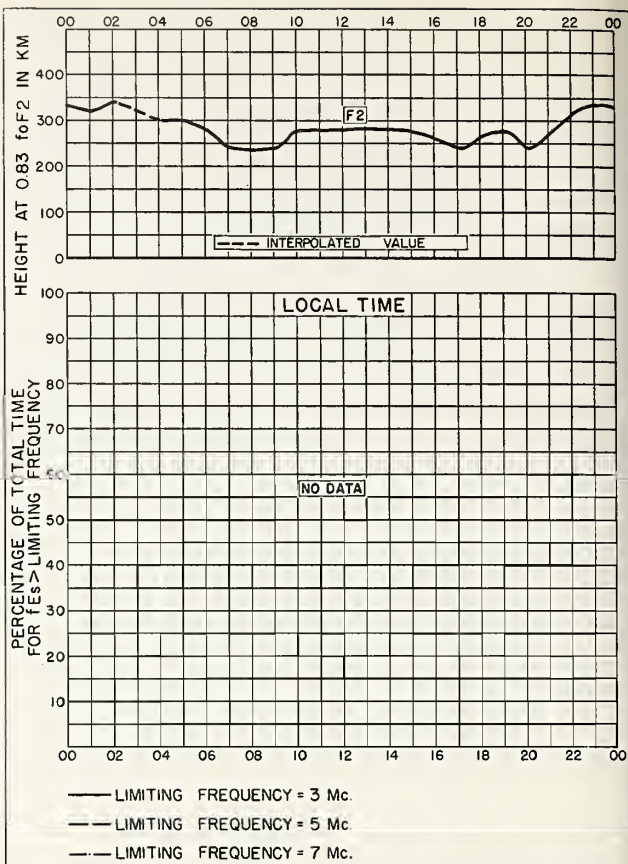


Fig. 106. DELHI, INDIA

JANUARY 1956

NBS 490

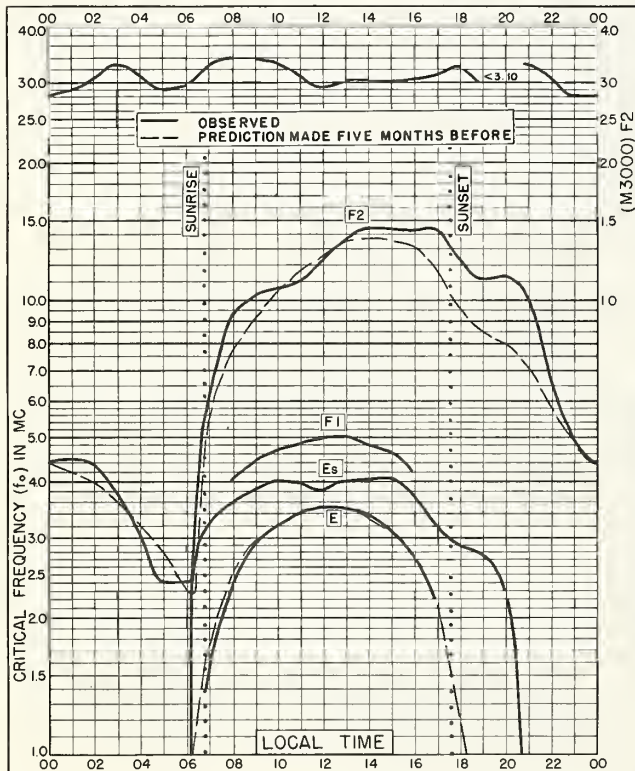


Fig. 107. AHMEDABAD, INDIA  
23.0°N, 72.6°E

JANUARY 1956

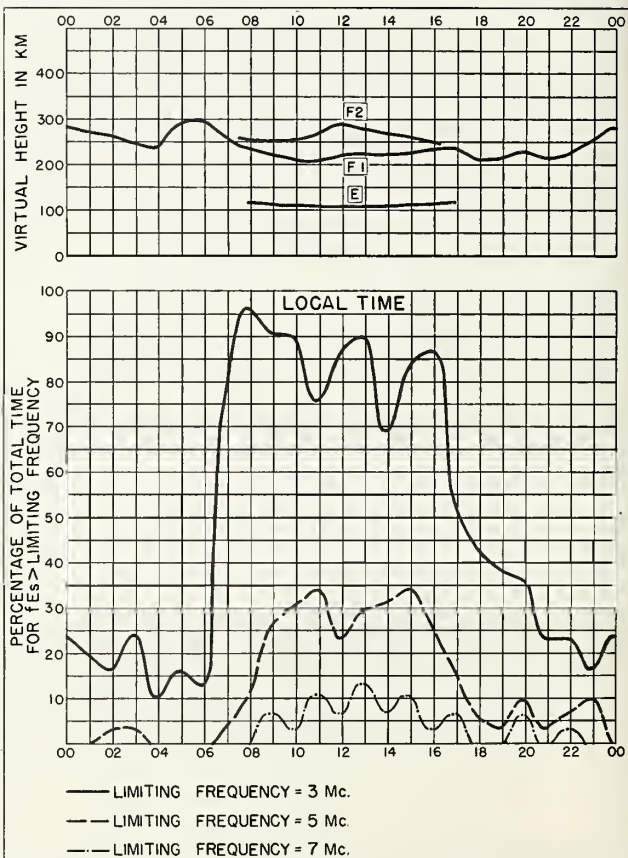


Fig. 108. AHMEDABAD, INDIA

JANUARY 1956

NBS 490



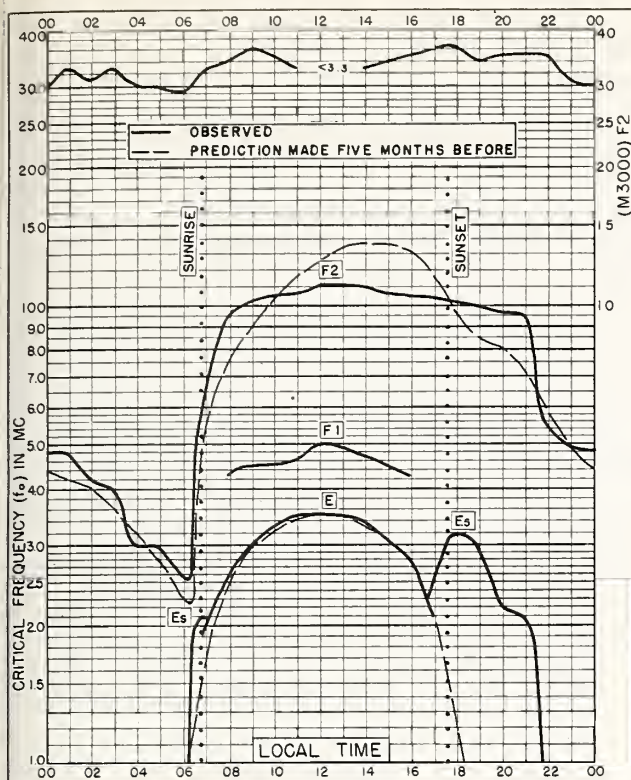


Fig. 109. CALCUTTA, INDIA  
22.9°N, 88.5°E

JANUARY 1956

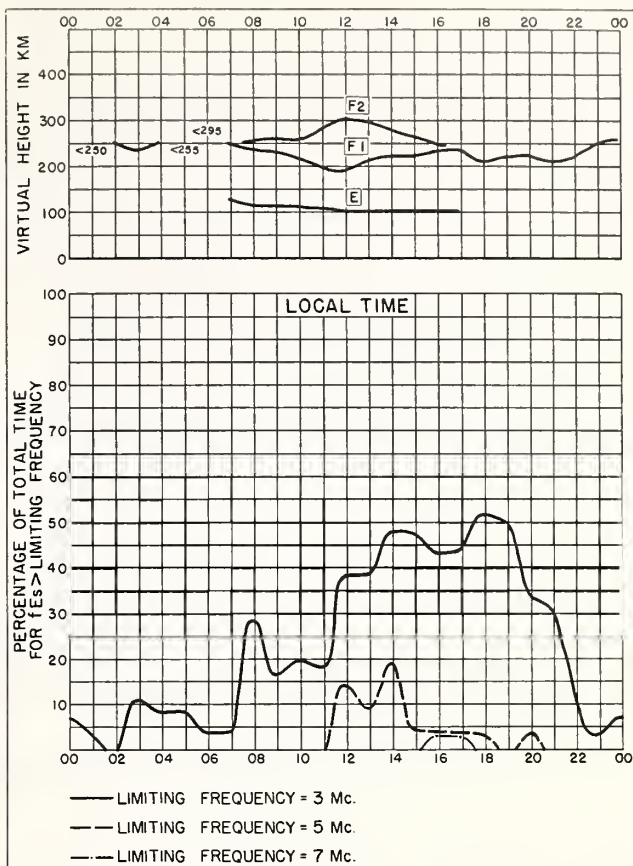


Fig. 110. CALCUTTA, INDIA

JANUARY 1956

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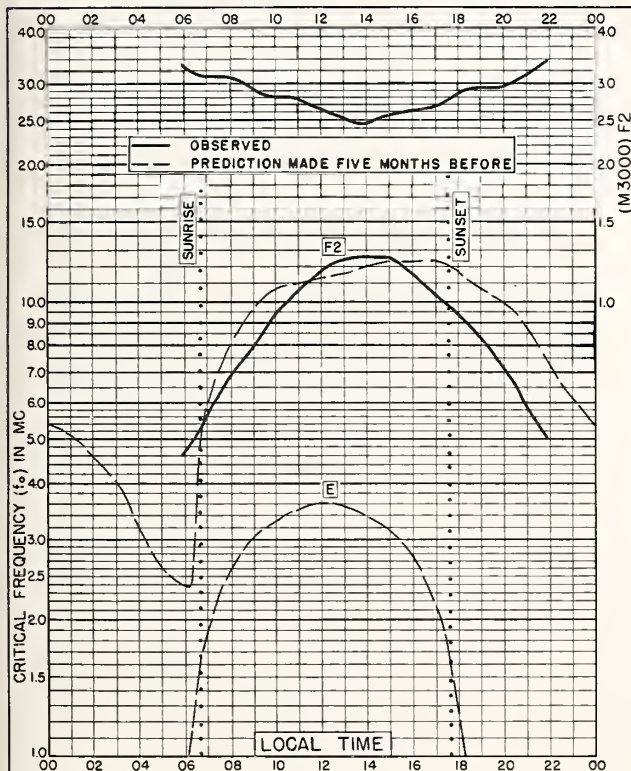


Fig. 111. BOMBAY, INDIA  
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JANUARY 1956

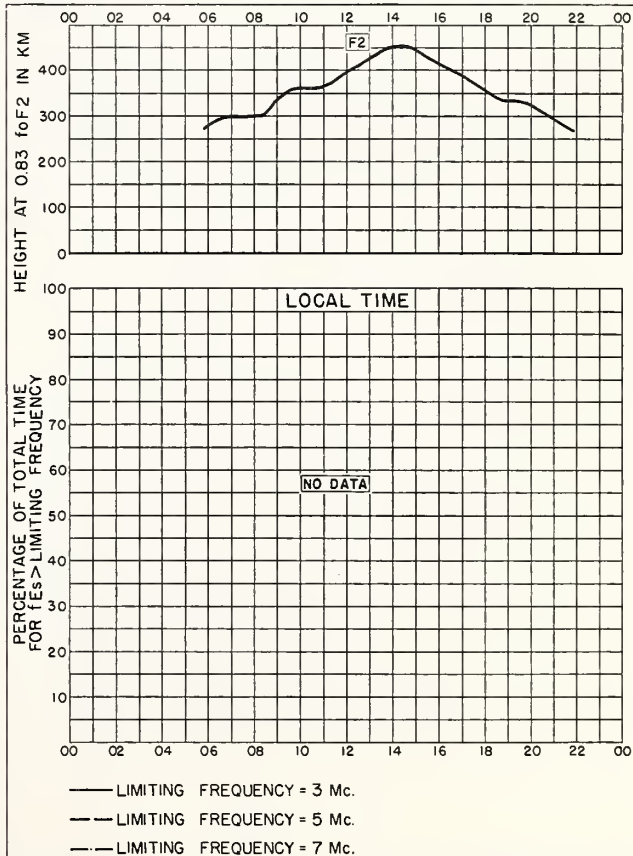


Fig. 112. BOMBAY, INDIA

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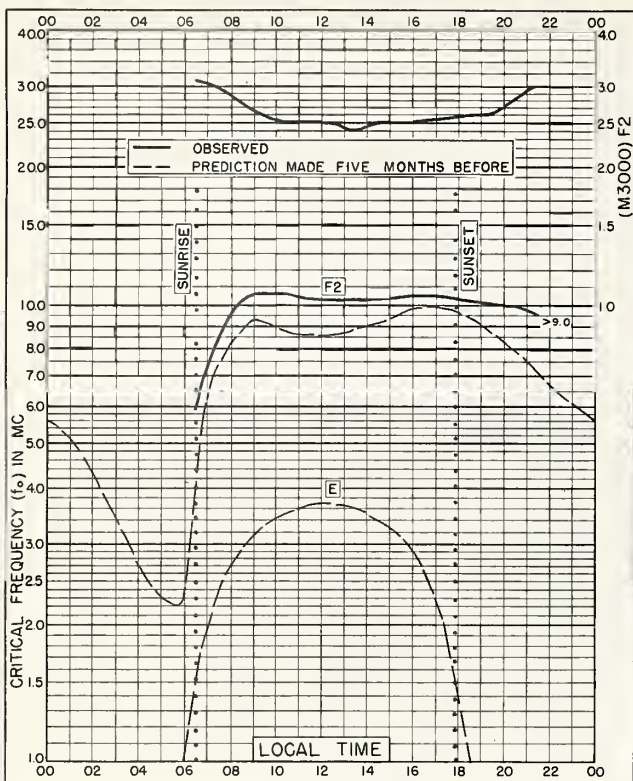


Fig. 113. MADRAS, INDIA  
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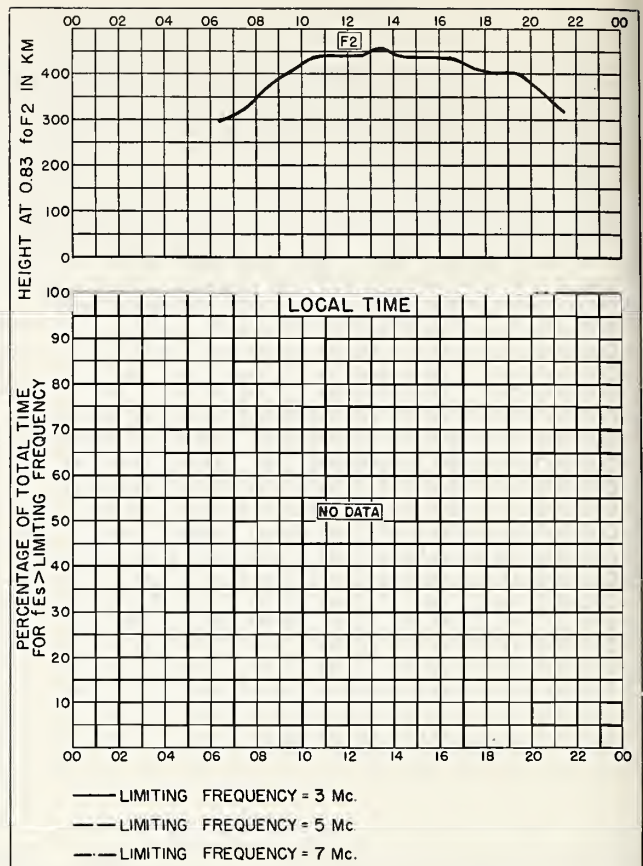


Fig. 114. MADRAS, INDIA JANUARY 1956

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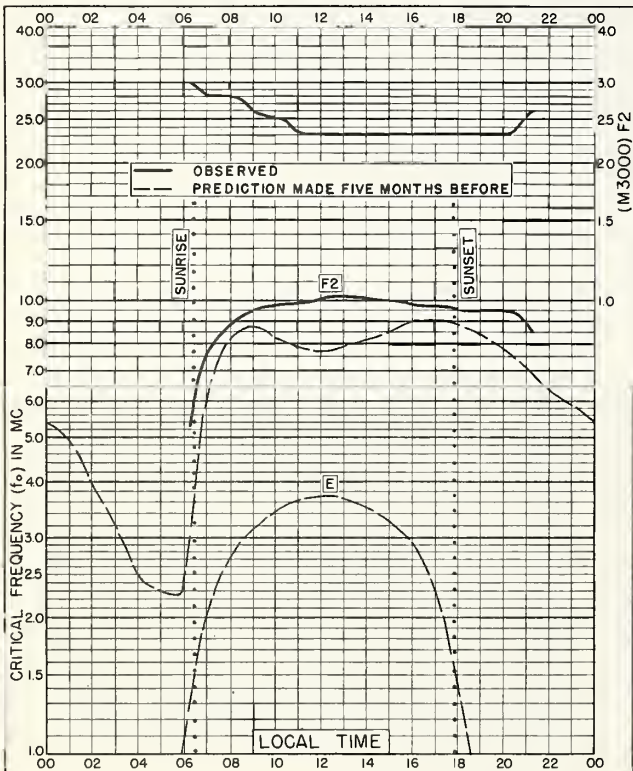


Fig. 115. TIRUCHY, INDIA  
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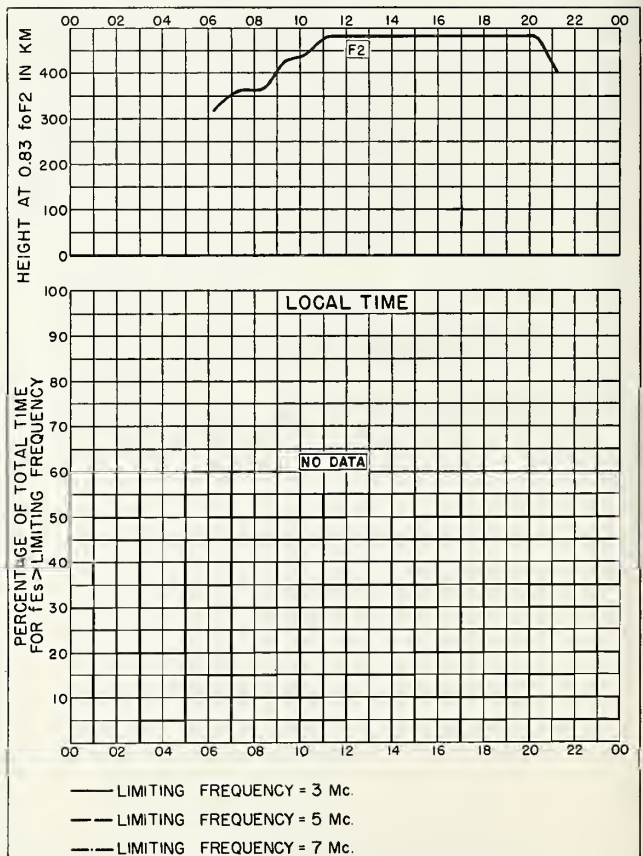


Fig. 116. TIRUCHY, INDIA JANUARY 1956

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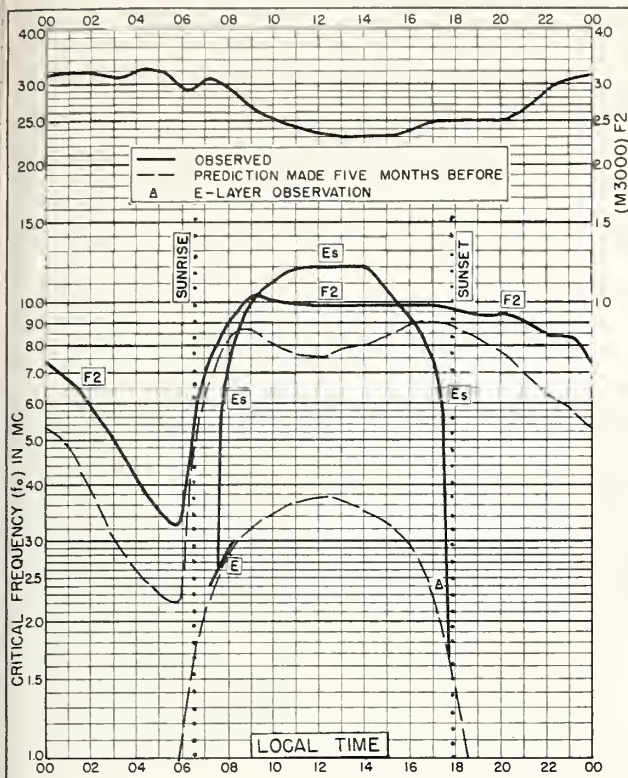


Fig. 117. KODAIKANAL, INDIA  
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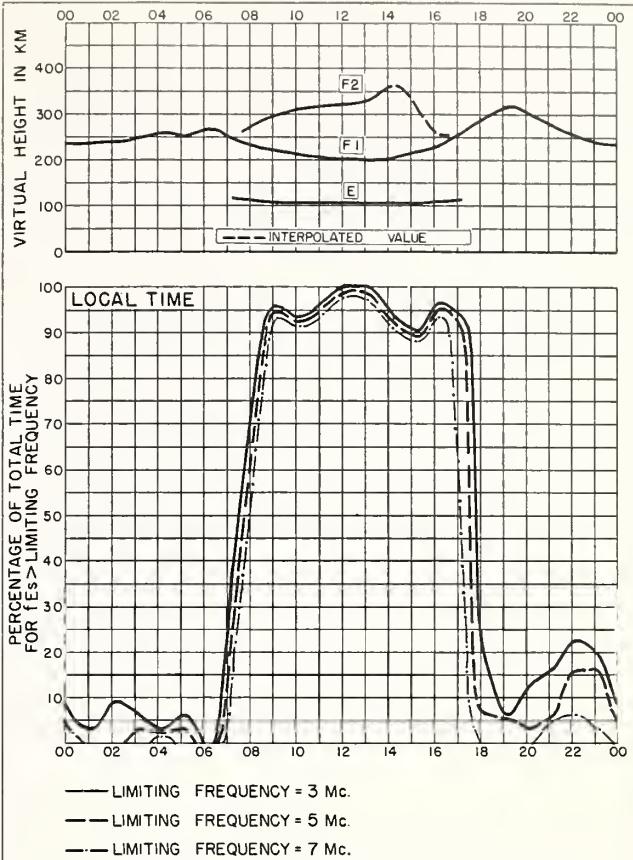


Fig. 118. KODAIKANAL, INDIA

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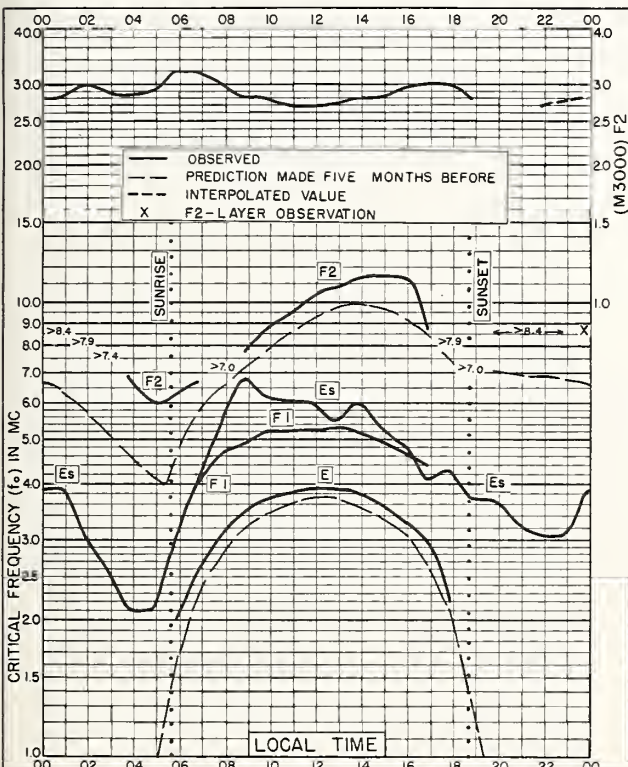


Fig. 119. TOWNSVILLE, AUSTRALIA  
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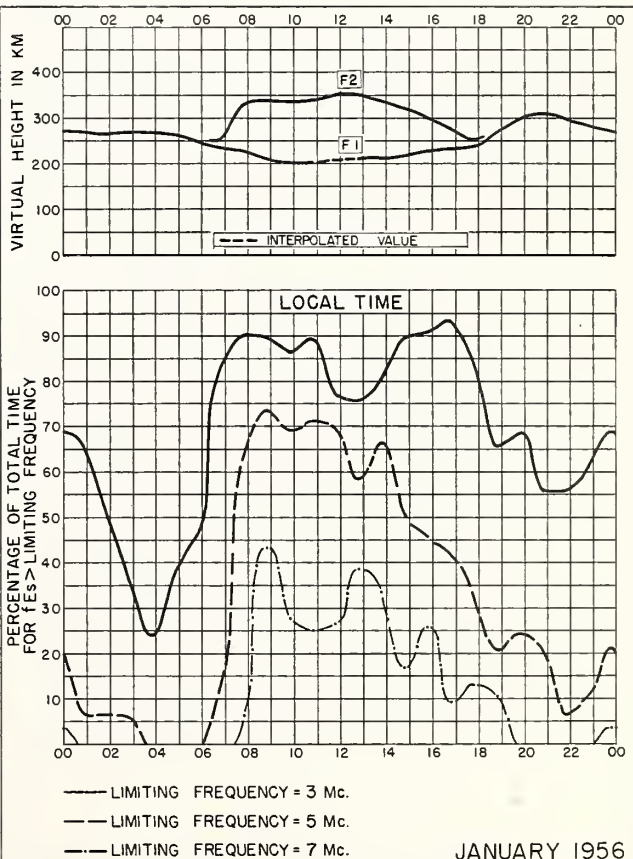


Fig. 120. TOWNSVILLE, AUSTRALIA

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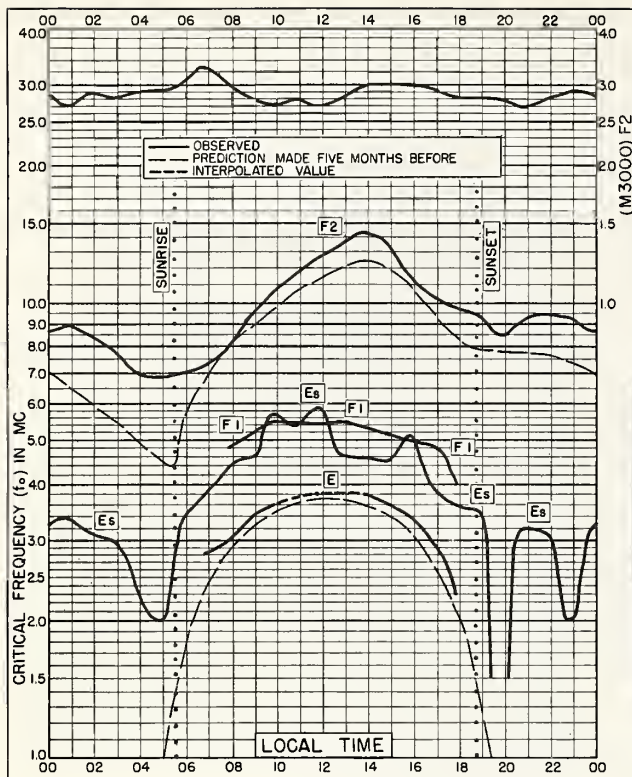


Fig. 121. RAROTONGA I.  
21.3°S, 159.8°W

JANUARY 1956

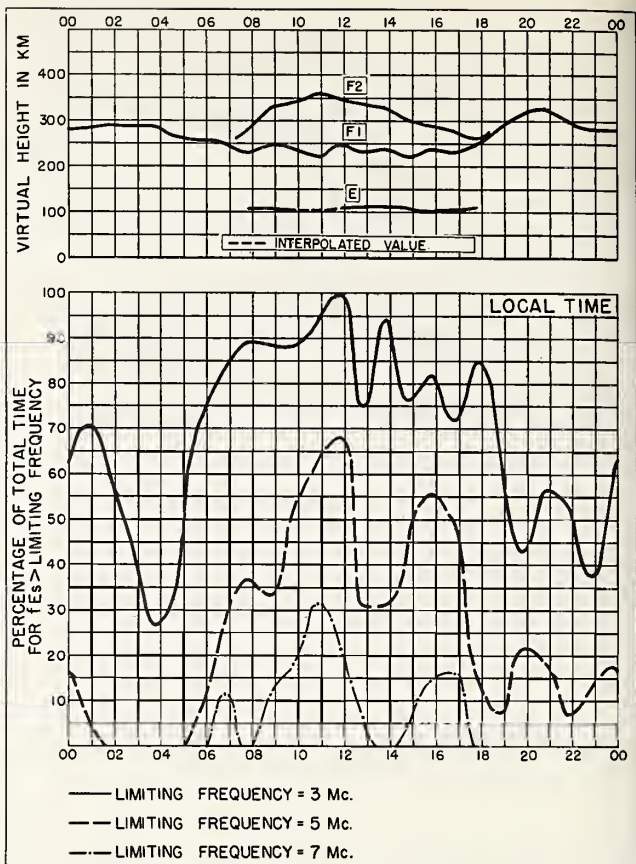


Fig. 122. RAROTONGA I.

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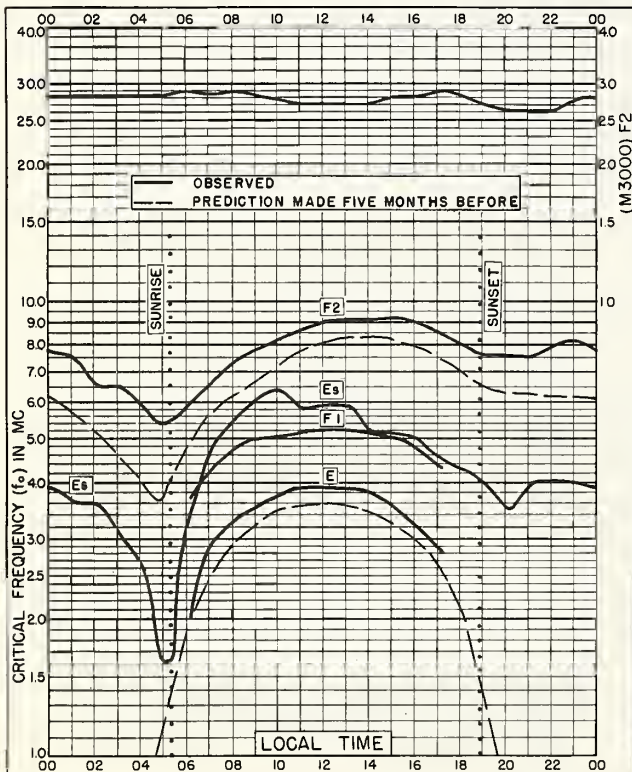


Fig. 123. BRISBANE, AUSTRALIA  
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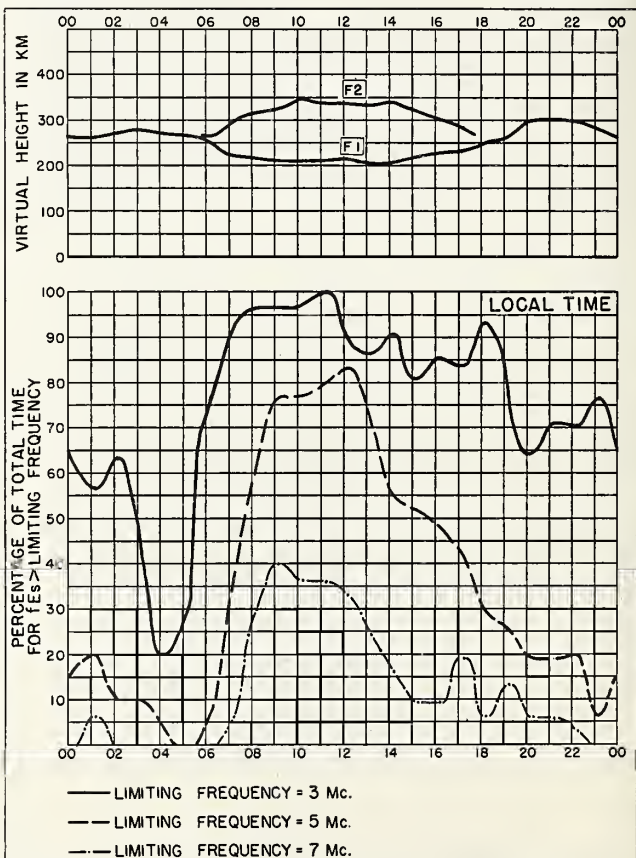


Fig. 124. BRISBANE, AUSTRALIA

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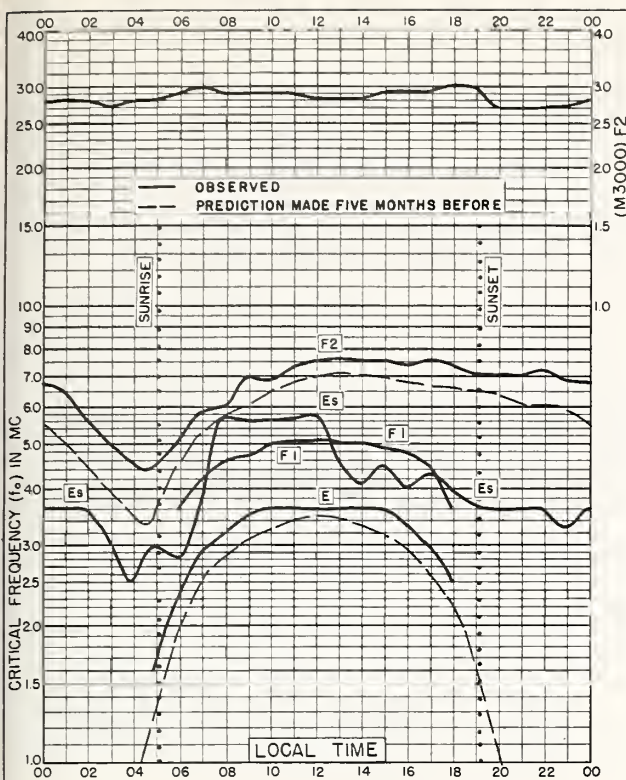


Fig. 125. CANBERRA, AUSTRALIA  
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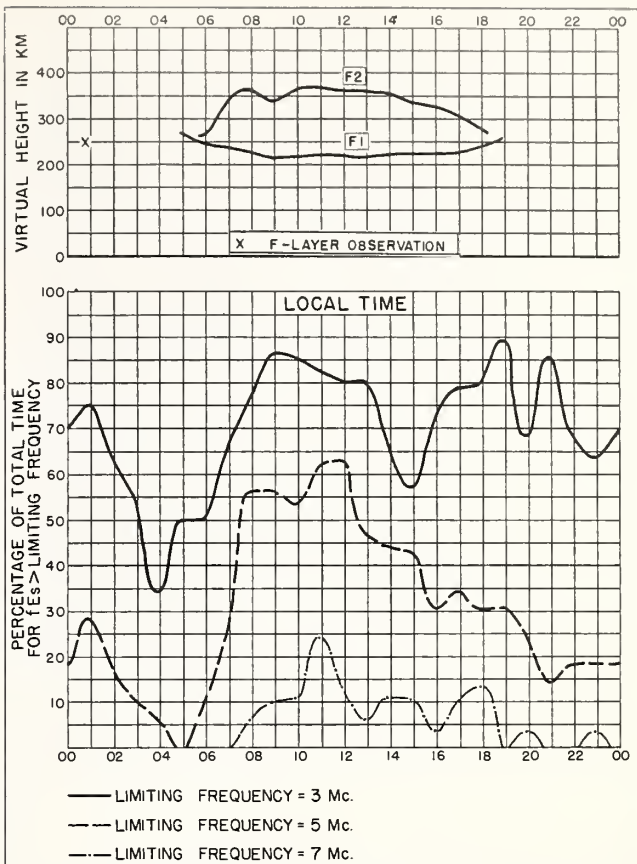


Fig. 126. CANBERRA, AUSTRALIA JANUARY 1956

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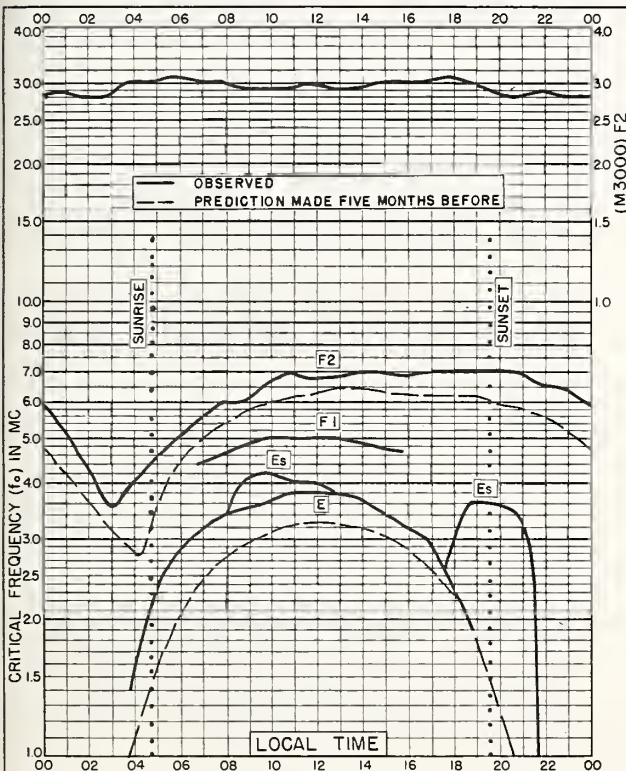


Fig. 127. HOBART, TASMANIA  
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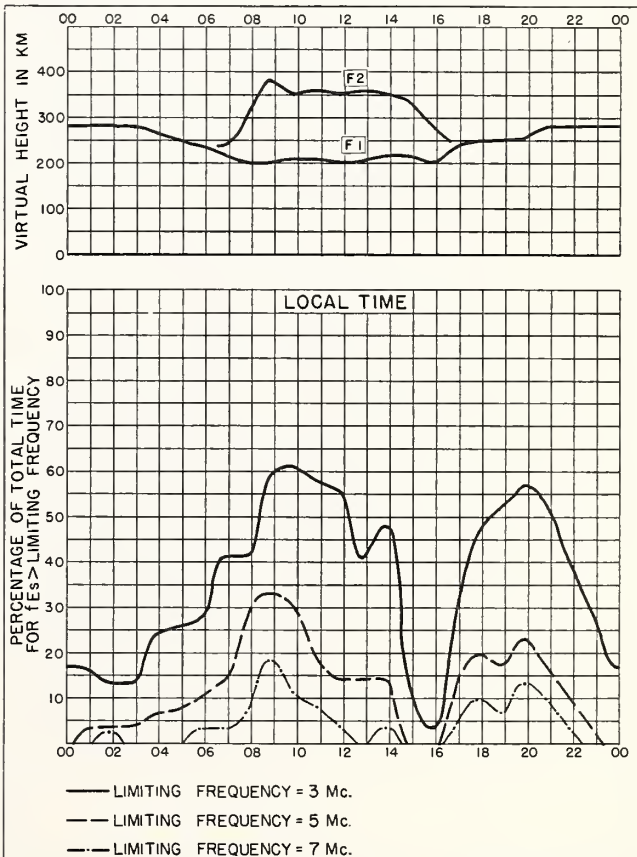


Fig. 128. HOBART, TASMANIA JANUARY 1956

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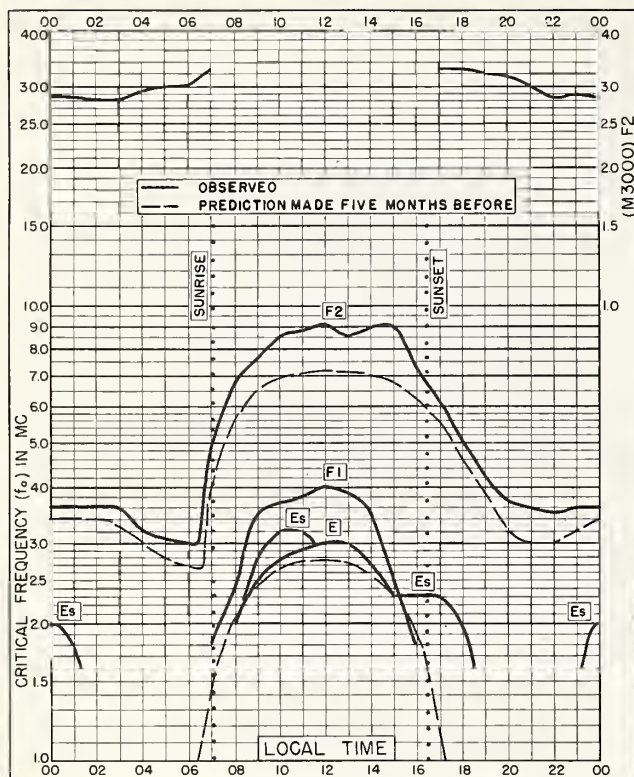


Fig. 129. POITIERS, FRANCE  
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NOVEMBER 1955

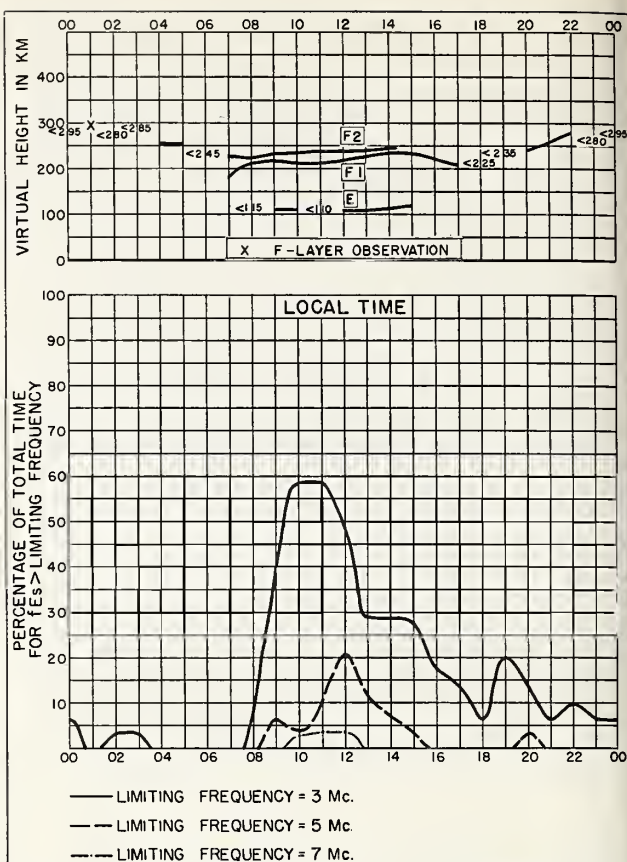


Fig. 130. POITIERS, FRANCE  
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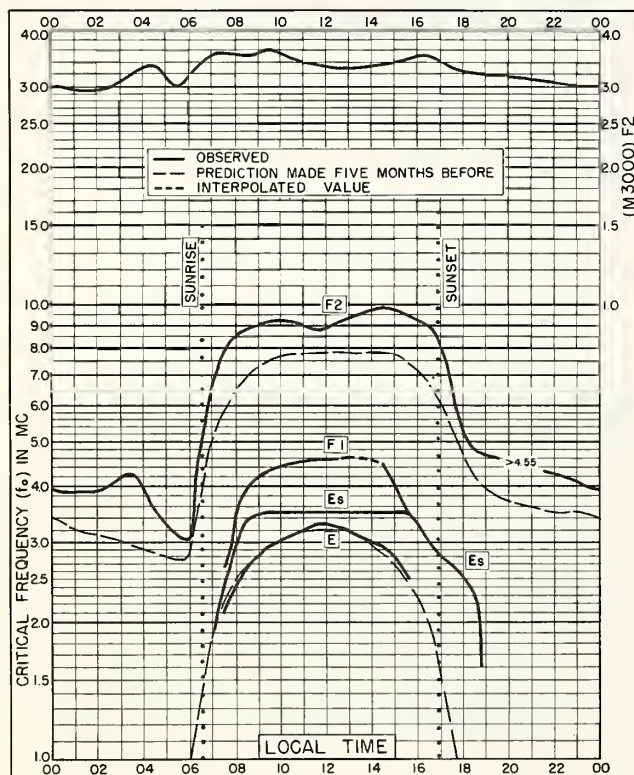


Fig. 131. CASABLANCA, MOROCCO  
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NOVEMBER 1955

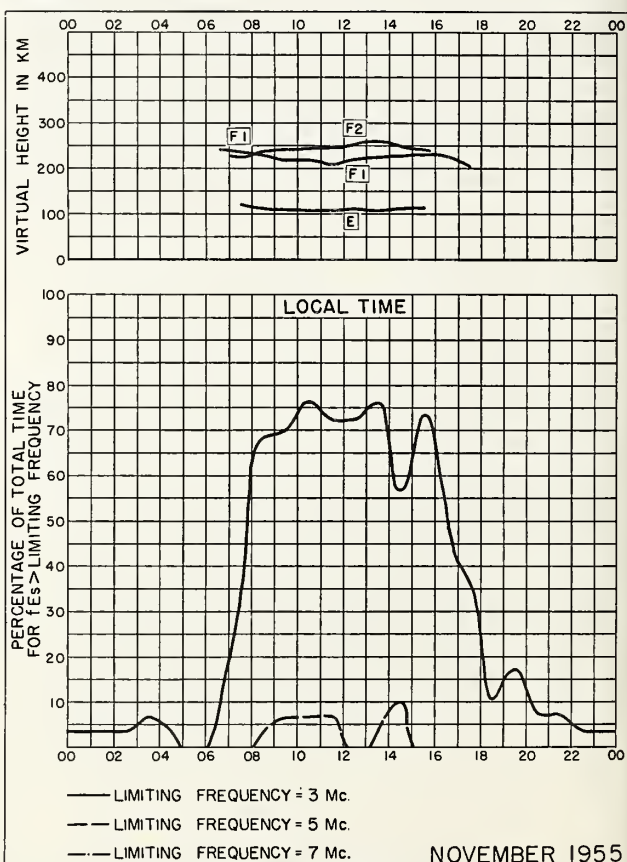


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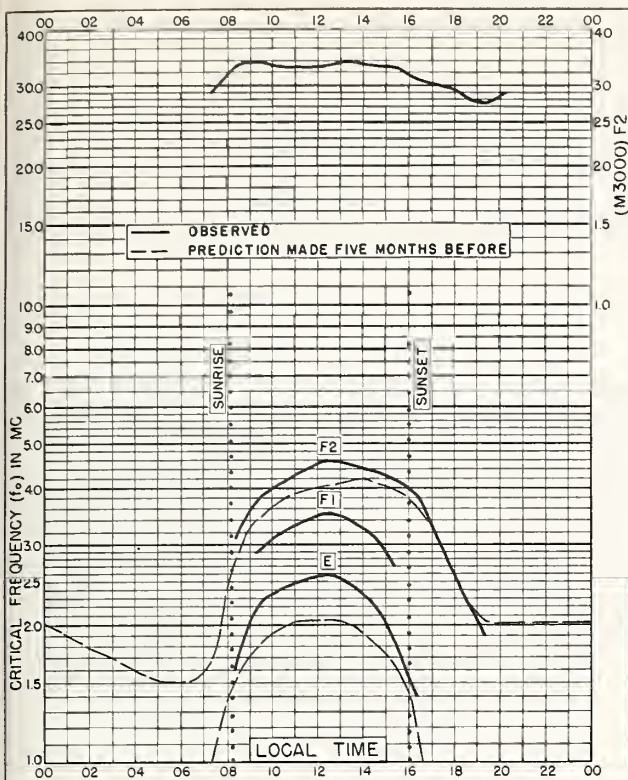


Fig. 133. CAMPBELL I.  
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JULY 1954

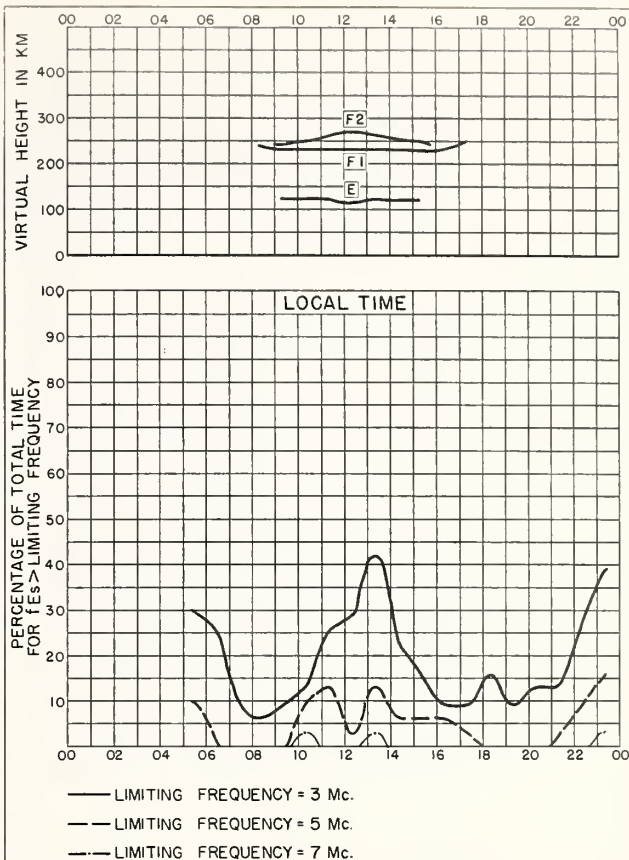


Fig. 134. CAMPBELL I.

JULY 1954

NBS 490

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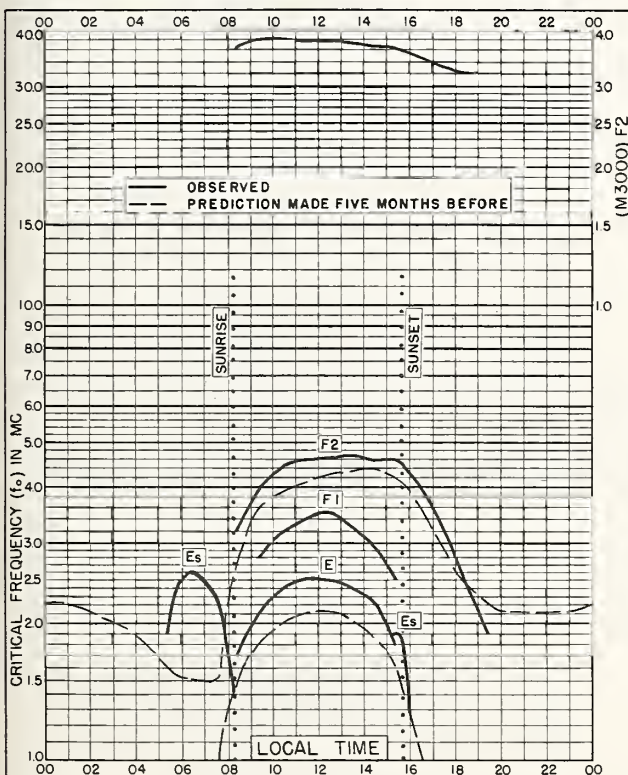


Fig. 135. CAMPBELL I.  
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JUNE 1954

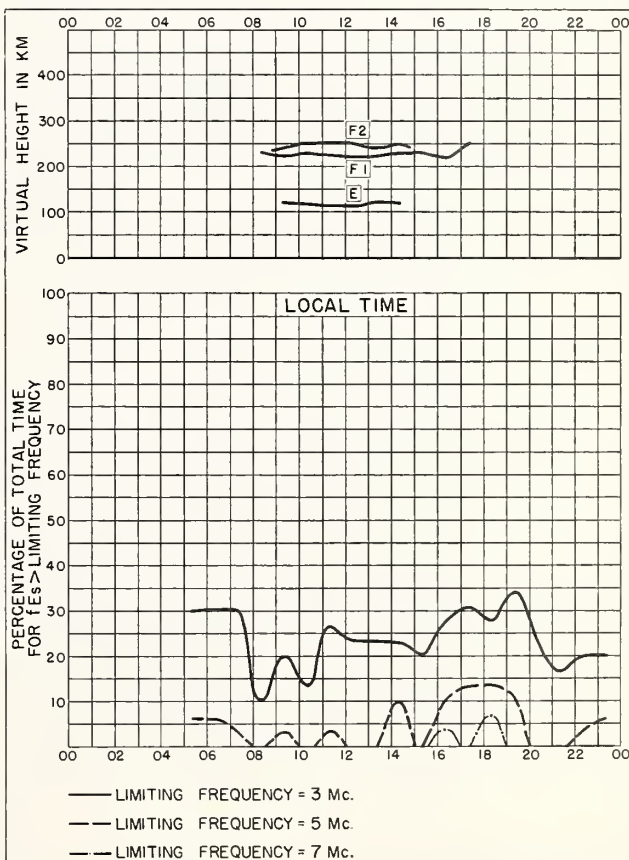


Fig. 136. CAMPBELL I.

JUNE 1954

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 195277

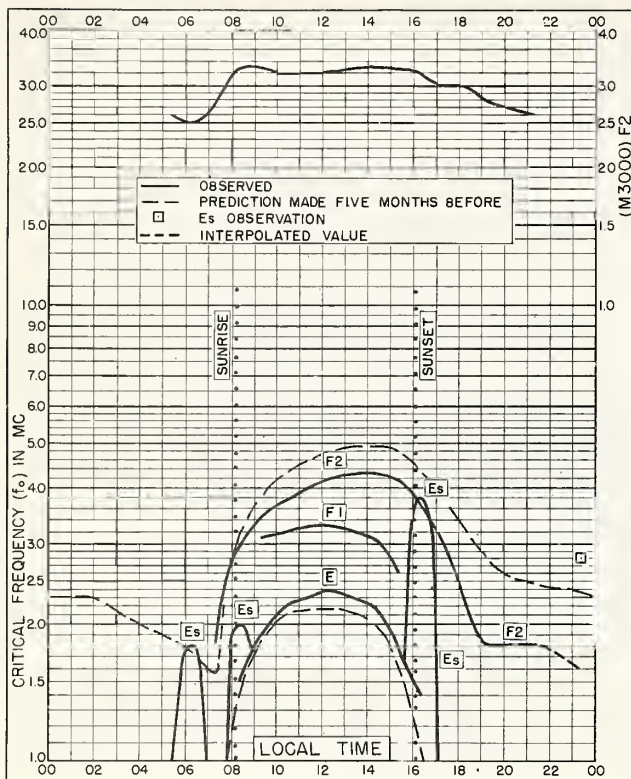


Fig. 137. CAMPBELL I.

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JULY 1953

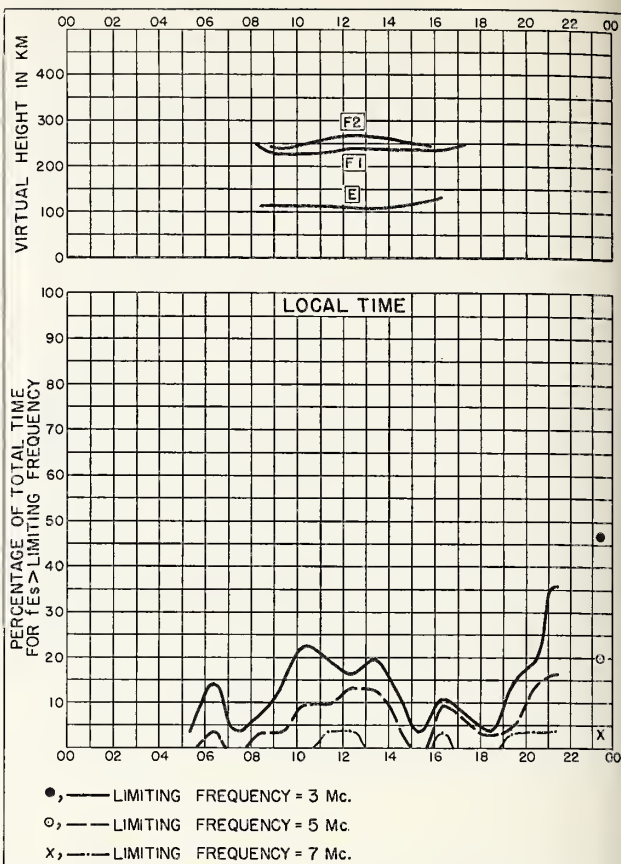


Fig. 138. CAMPBELL I.

JULY 1953

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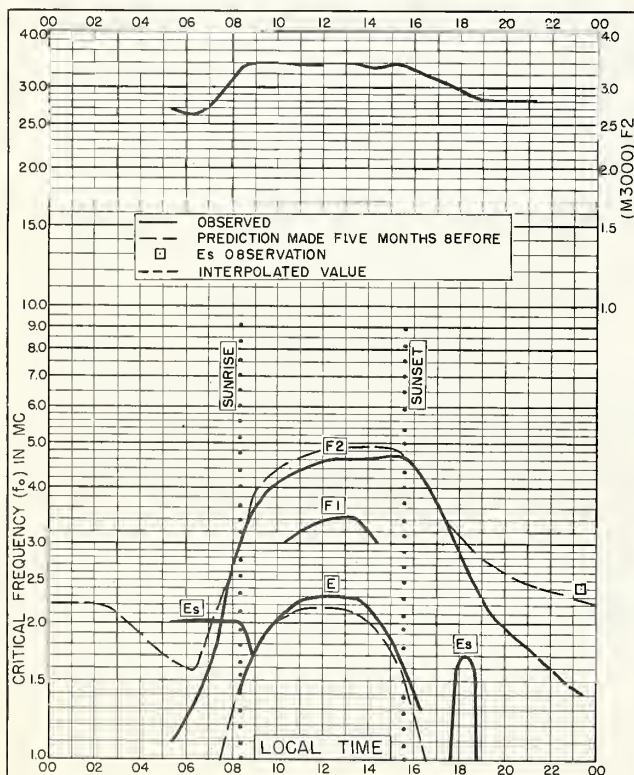


Fig. 139. CAMPBELL I.

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JUNE 1953

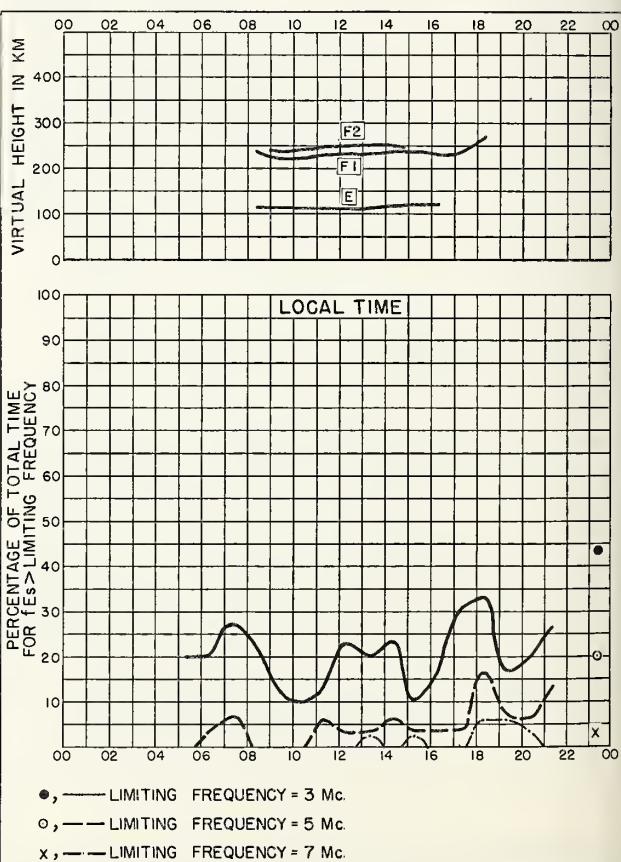


Fig. 140. CAMPBELL I.

JUNE 1953

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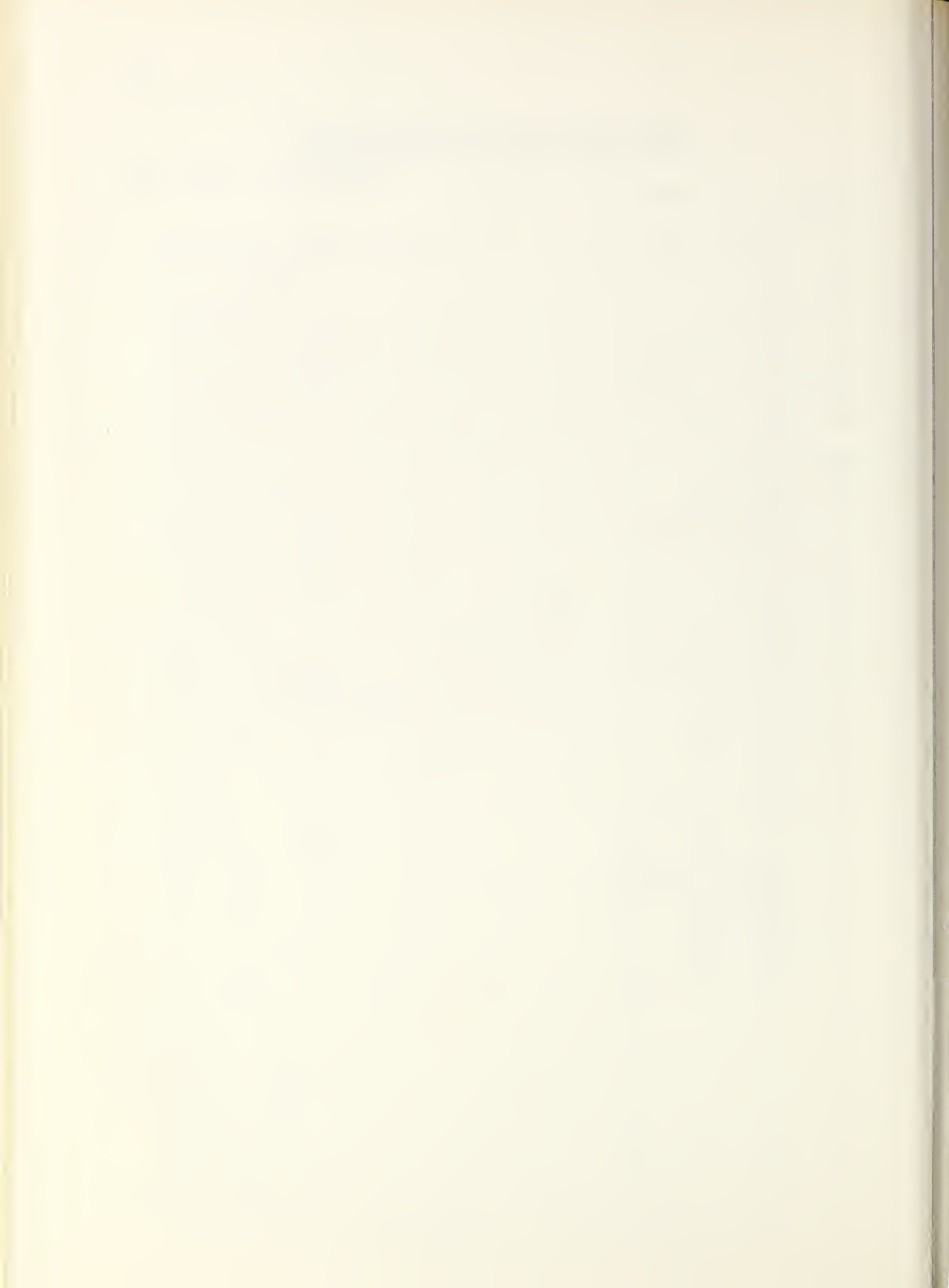


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